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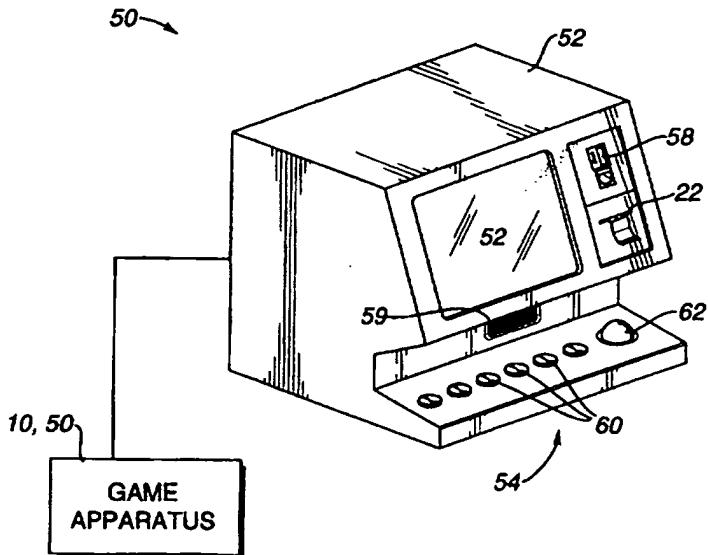
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A63F 9/24		A1	(11) International Publication Number: WO 97/37737 (43) International Publication Date: 16 October 1997 (16.10.97)
(21) International Application Number: PCT/US97/05600		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 3 April 1997 (03.04.97)			
(30) Priority Data: 08/628,490 5 April 1996 (05.04.96) US 08/746,755 14 November 1996 (14.11.96) US			
(71) Applicant (for all designated States except US): RLT ACQUISITION, INC. [US/US]; 4430 Willow Road, Pleasanton, CA 94588 (US).			
(72) Inventors; and		Published	
<p>(75) Inventors/Applicants (for US only): KELLY, Matthew, F. [US/US]; 277 Winterside Circle, San Ramon, CA 94583 (US). KELLY, Bryan, M. [US/US]; 24 Holiday Drive, Alamo, CA 94507 (US). PETERMEIER, Norman, B. [US/US]; 1092 Piedmonte Drive, Pleasanton, CA 94566 (US). KROECKEL, John, G. [US/US]; 976 Joaquin Avenue, San Leandro, CA 94577 (US). LINK, John, E. [US/US]; 763 Saddleback Court, Tracy, CA 95376 (US).</p>			
(74) Agents: HICKMAN, Paul, L. et al.; Hickman Beyer & Weaver, P.O. Box 61059, Palo Alto, CA 94306 (US).			

(54) Title: PRIZE REDEMPTION SYSTEM FOR GAMES

(57) Abstract

A prize redemption system (52) for use with one or more game apparatuses (10). A game is provided on a game apparatus (10) for a player to play in exchange for monetary input (58), and prize credits are credited to the player based on the game. A prize selection menu is displayed by the game apparatus (52), the menu including one or more prizes, where the player may select a prize having a prize cost within the player's prize credit amount. The player can be dispensed a specific prize ticket (22) that is redeemable for the selected prize. The game apparatus can also provide specific prizes and tournament games played for a tournament prize contributed to by multiple players. An operator can adjust prizes and payout percentages of the system using buttons (60) and tyrack ball (62) to achieve a desired profitability for game apparatuses. Prize input is entered into a prize table describing multiple available prizes and payout information that indicates a desired



amount of payout that the operator wishes to provide back to players in terms of the value of prizes. Prize information, such as prize costs and specific prize win ratios, is automatically determined by the system for each of the prizes in view of the desired profitability of the game apparatus.

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PRIZE REDEMPTION SYSTEM FOR GAMES

BACKGROUND ART

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This invention relates to games normally played in an arcades and other environments, and more particularly to redemption games allowing a player to receive one or more prizes in connection with playing the game.

Games of many types are played in bars, arcades, homes, and other public and private 10 establishments. In bars, taverns, and like places, games can be provided on bar tops, side tables, and other areas. These games typically include a video screen and buttons or other controls for the player to influence objects and events portrayed on the video screen. Common "bar-top" games include card games (poker, blackjack, solitaire, etc.), quiz games, sports games, and the like. Bar-top games typically provide a score based on the player's 15 performance during the game, and may also provide a high score list which provides incentives for players to perform well.

In game arcades, convenience stores, and the like, more involved games are often offered, such as stand-up arcade video games, pinball games, and mechanical or carnival 20 games. Some of these types of games are offered as redemption games which dispense redemption tickets to players based on player performance during the game and/or a game score that the player achieves. A player can exchange dispensed redemption tickets for 25 prizes available at a prize display area, such as a prize booth or prize vending machine, where such prizes as, stuffed animals, models, other toys, small music devices, T-shirts, food, etc. are available. Each prize has an associated cost or "price" in terms of redemption tickets which the player can pay to redeem the prize. A player may collect tickets over time to save up for larger prizes that may have higher ticket prices.

One problem with the redemption games of the prior art is that maintaining a 30 redemption system can be very involving for the operator of the arcade, to the point of being burdensome. For example, operators must maintain a prize booth or vending machine which displays all the prizes the operator wishes to make available. Requiring even greater maintenance is the setting and adjustment of ticket costs or prices of the prizes. The operator must determine how many tickets are paid, on average, by each game in the arcade and then determine the price of each prize in terms of tickets and in view of a desired profitability 35 level. The operator knows the cost of the prizes that he or she paid, can come up with a crude estimate of average ticket payouts to players, and can thus estimate ticket costs with a rough profitability in mind, but the task can become overwhelming when a large variety of

prizes are offered and many different types of games can be played, each game having a different ticket payout and difficulty level. Many arcade operators end up simply providing very gross estimates of what prizes should be worth in tickets, with no exact or global level of profitability in mind. This may lead to extra or unknown costs which can be magnified 5 over time when large numbers of prizes are redeemed by players.

There is also a very large untapped pool of redemption game players in bars, taverns, and other, non-arcade public places, such as stores, hotels, food establishments, etc. This is because the games typically offered in such places often have low appeal to players due to the absence of any sort of tangible award or prize that is received by playing the game. For 10 example, the bar-top and other games typically found in bars may quickly get uninteresting if the only reward a player receives is to put his or her name on a high-score list.

However, non-traditional gaming environments such as bars are not very suitable for supporting redemption systems like those found in gaming arcades. The proprietor or bartender of the non-arcade environment often does not want to provide a booth or area to 15 display available prizes for players due to the additional maintenance and staff needed for such a display area. More importantly, the proprietor typically does not have the knowledge to properly adjust payouts of redemption games and offer prizes with proper and profitable ticket costs. Even if the proprietor has such knowledge, the small numbers of games and/or 20 the secondary role of games in non-traditional gaming environments does not warrant providing a prize display area and does not warrant the abovementioned overhead of providing and counting the many tickets that players may accumulate and providing/maintaining ticket costs for various prizes in view of a desired profitability of the games.

Other gaming environments for players include homes or other private places. 25 Players have been able to play board games, computer games, video games, etc. at home or other private environments for a long time. However, with the widespread use of standardized large-scale networks such as the Internet and World Wide Web in recent years, players of video and computer games at home are offered an environment to compete with 30 each other which was not widely available to game players before. A player can connect a home computer, video game console, set top box, or other device to the Internet using telephone lines, cable TV lines, or other connections to the home. The player can thus play games offered to the player from a remote server or other source. The player can also compete or otherwise interact in a game with hundreds or even thousands of other players who are also connected to the Internet.

35 However, although a wide array of options are available for home game players,

players typically cannot play games from home to receive prizes. Players may often desire to receive a prize after playing a game or participating in a tournament, but no standardized prize redemption system is provided to home players. Any administrator of such a prize redemption system faces the same problems and overhead as described above when 5 attempting to organize ticket winnings and offer prizes at ticket costs adjusted for a desired profitability.

Other problems with prior art redemption systems involve the use of standard redemption tickets to receive prizes. In the prior games, the players can exchange 10 redemption tickets won from a game for prizes available at a prize display area. Each prize has an associated "price" in terms of redemption tickets which the player can pay to receive the prize. A player may collect tickets over time to save up for larger prizes that may have 15 higher ticket prices. However, certain prizes, particularly the more expensive or larger prizes, require so many tickets to buy that the player often is not motivated to play the games to win tickets. In addition, the player knows that only the same types of tickets can be won when playing any of the games, and this type of award may not be exciting to players in many instances. Furthermore, a player may not know which prizes are available and may 20 thus not have a particular prize in mind when playing a game for tickets, which can lead the player to become disinterested in the game. Finally, games provided in other, non-arcade public places or non-redemption environments, such as bars and stores, may have low appeal 25 to players due to the absence of any sort of tangible award or prize that is received by playing the game. Yet, as explained above, these traditionally non-redemption environments are not very suitable for supporting games using standard redemption tickets, since the bartender or owner of the non-arcade environment typically does not want the overhead of providing and counting the many tickets that players may accumulate and does not want to spend the extra effort involved in providing and maintaining ticket prices for various prizes. These problems are undesirable in an arcade environment or other redemption game environment where revenues are directly related to players' continuous, repeated use of the games.

SUMMARY OF INVENTION

30 The present invention provides a prize redemption system and method for use with one or more game apparatuses. Players may win "prize credits" by playing the game apparatus, and may then select a prize from a prize menu offered on the game apparatus. The selected prizes and specific prizes may be redeemed using specific prize tickets or coupons. The operator can provide cost and prize data and a desired level of profitability, and prize 35 credit costs for prizes are automatically determined. These improvements greatly reduce the

time and costs of maintaining a redemption system for games, and thus allow redemption games to be offered in wholly new, non-traditional redemption and gaming environments.

More specifically, the prize redemption system and method of the present invention 5 provides a game on a game apparatus for a player to play, preferably in exchange for monetary input. The game apparatus, for example, can take the form of a bar-top-style game console including a game processor, display screen and player controls. A number of prize credits are provided to the player based on an outcome of the game and optionally accumulated from previous games. In some embodiments, the outcome of the game is 10 influenced by skill of the player. A prize selection menu is then displayed for the player, the menu including one or more selectable prizes. The prize selection menu may include a prize cost in terms of prize credits for each of the displayed prizes and which can be determined by the redemption system. Finally, the player inputs an indication of a selection of a prize using 15 an input device. The player may select a prize that has a prize cost equal to or less than the number of prize credits the player has won. The selected prize is provided to the player after this selection. In one described embodiment, the player receives a specific prize ticket or coupon from a dispenser, where the specific prize ticket is redeemable for the selected prize.

In the preferred embodiment, at least one specific prize goal may also be achieved 20 during a game, using skill or by chance. If a specific prize goal is achieved, the player receives a specific prize which can be determined from a prize table listing specific prizes that can be won by a player. The game apparatus can provide many types of games and options for games. For example, an option can be provided to the player for playing a tournament game for a tournament prize contributed to by multiple players of the game 25 apparatus and other linked game apparatuses. Examples of games offered by the game apparatus include action video games which provide a player with opportunities to utilize dexterity and play duration in increasing game score, card games in which the outcome of the game is, in part, randomly influenced, quiz games providing questions to which said player responds, slot machine games, electromechanical redemption games, etc.

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The game apparatus can also be linked to multiple other game apparatuses to provide simultaneous multi-player games and tournaments including players from several different game apparatuses. A server linked to the multiple game apparatuses can store or control prize information and/or tournament information. Players of the linked game apparatuses 35 may choose prizes from a central prize database communicated to the game apparatuses.

In another aspect of the present invention, the redemption system provides an operator the ability to adjust prizes and determine desired prize costs and win ratios. A prize

table is displayed on a game apparatus or other computer system. Prize input is received from the operator or other source (e.g., remote server) and displayed in the prize table. The prize input describes multiple prizes that are to be available in the redemption system to players of the game apparatus in exchange for prize credits won by the player and as specific prizes. The prize input also may include an actual monetary cost of each of the prizes. The operator also enters payout input that indicates a desired amount of payout that said operator wishes to provide back to players of the game apparatus in terms of the value of the prizes. Finally, prize information is automatically determined for each of the prizes, the prize information being determined in view of a desired profitability of the game apparatus.

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For prizes won by prize credits and selected by a player, the prize information is a prize cost for each of the prizes in terms of prize credits. The prize cost is determined in accordance with the operator's desired amount of payout. The payout input for credit prizes may include a global payout percentage value that is the operator's desired percentage of the monetary income earned by the game apparatus that the operator wishes to provide back to players in the form of the prizes won using prize credits. Operators can also manually adjust prize costs if desired.

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For specific prizes won on the game apparatus, the determined prize information includes a win ratio for each of the prizes in terms of how frequently that the particular prize is awarded when a specific prize goal is met. The win ratio is determined in accordance with the operator's desired amount of payout. The payout input for specific prizes includes a global payout percentage that is the operator's desired percentage of the monetary income earned by the game apparatus that the operator wishes to provide back to players in the form of specific prizes. The operator can also manually adjust win ratios if desired. Tournament characteristics and payouts can be similarly adjusted by the operator using a tournament setup table.

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In another aspect of the present invention, the game apparatus can determine if the player has won a specific prize that is offered by the game apparatus. If the player wins a specific prize, the game apparatus informs the player the prize has been won. A display screen can be used to provide prize-related information to the player before, during and after the game, such as the specific prizes that are available. In some embodiments, the player wins a specific prize if that player achieves a predetermined goal or task during the game process based on a skilled performance. The game apparatus preferably displays if a specific prize has been won and the specific type of prize that has been won. A specific prize ticket dispenser can be included for providing a specific prize ticket or other voucher to the player. The specific prize ticket includes indicia describing the specific prize that has been won by

the player. The player can exchange the specific prize ticket for the specific prize at a prize booth or other supplier.

The redemption system and game apparatus according to the present invention offer a comprehensive prize system that provides a player with immediate and easy-to-select prize choices. The player can quickly determine what prizes are available on the same game apparatus which the game was played and select a desired prize. The players can also win a specific prize. The players may immediately get a specific prize ticket that is redeemable for their selected prize or specific prize, thus avoiding the time and money of accumulating large numbers of dispensed tickets to purchase prizes. Player involvement with the redemption games is thus increased.

Furthermore, the redemption system of the present invention vastly decreases operator involvement in a prize redemption system and the overhead of maintaining a prize structure for redemption games. An operator need only input desired prizes and a desired percentage of income that is to be paid back to players, and the system can automatically determine prize credit costs and win ratios for the entered prizes which achieve the desired profitability of the game apparatus. These entered prizes and prize costs are then automatically provided to players on the game apparatus. This reduces the operator's need to update prizes and prize costs and provides a far more exact system for maintaining prizes and achieving a desired profitability of offered games. Furthermore, specific prizes reduce the operating costs to operators of implementing a redemption system, since large amounts of tickets do not have to be counted and individual ticket prices need not be maintained for prizes and provide operators with easy verification that the player has won a specific prize. These features reducing operating and maintenance costs of redemption games and allowing redemption games to be provided in non-traditional gaming environments.

These and other advantages of the present invention will become apparent to those skilled in the art after reading the following descriptions and studying the various figures of the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a diagrammatic illustration of a game apparatus suitable for use with the present invention;

FIGURE 1a is a block diagram of a game processor used in the game apparatus of Figure 1;

FIGURE 2 is a perspective view of a preferred embodiment of the game apparatus of Figure 1;

FIGURE 3 is a block diagram showing an embodiment of the present invention for implementing networked game apparatuses;

5 FIGURE 4 is a block diagram of game units networked using wide area network such as the Internet;

FIGURE 5 is a flow diagram illustrating a process of the present invention for implementing a redemption system of the present invention on one or more individual game units;

10 FIGURE 5a is a diagram illustrating a display shell on a display screen of the game apparatus for use with the redemption system;

FIGURE 5b is a diagram illustrating a selection screen of the game apparatus;

FIGURE 5c is a diagram illustrating a promotion on the display screen of the game apparatus;

15 FIGURE 5d is a diagram illustrating an advertisement on the display screen of the game apparatus;

FIGURE 6 is a flow diagram illustrating a method of implementing a non-tournament prize game in the process of Figure 5;

20 FIGURE 6a is a diagram illustrating an example of game score and prize credits won by a player as displayed on the display screen of the game apparatus;

FIGURE 6b is a diagram illustrating a prize selection menu on the display screen of the game apparatus;

FIGURE 6c is a diagram illustrating a graphical prize selection menu alternative to the menu shown in Figure 6b;

25 FIGURE 7 is a flow diagram illustrating a method of implementing a tournament game of the process of Figure 5;

FIGURE 8 is a flow diagram illustrating a method of concluding a tournament game of Figure 7;

FIGURE 8a is a diagram illustrating FIGURE 8a is a tournament standings display screen which is preferably displayed by the individual game unit after a selection of the tourney leaders button 282 or after a tournament is complete.

5 FIGURE 9 is a flow diagram illustrating a process of the present invention for adjusting prize characteristics of the redemption system;

FIGURE 9a is a diagram of a prize table suitable for use with the process of Figure 9; and

FIGURE 9b is a diagram of a tournament table suitable for use with the process of Figure 9.

10 FIGURE 10 is a perspective view of a specific embodiment of the game apparatus of Figure 1;

FIGURE 11a is a diagrammatic illustration of a display screen of the game apparatus of Figure 10;

15 FIGURE 11b is a diagrammatic illustration showing a second embodiment of the display screen of Figure 11a;

FIGURE 11c is a diagrammatic illustration showing the display screen of Figure 11b after a player has won a specific prize;

FIGURE 12 is a diagrammatic illustration of a specific prize ticket of the present invention;

20 FIGURE 13 is a flow diagram illustrating a method of playing and operating the game apparatus of Figure 1; and

FIGURE 14 is a flow diagram illustrating an example method of the present invention of determining a specific prize.

BEST MODES FOR CARRYING OUT INVENTION

FIGURE 1 is a block diagram of a generic game apparatus or "game unit" 10 suitable for use with the prize redemption system and specific prizes of the present invention. It should be noted that a variety of game architectures can be used to provide game play functions as well as access other game units and servers through networks, as described below. The particular architecture shown is a generic architecture using components typical to game apparatuses suitable for use with the present invention. Game unit 10 can take a variety of forms, including a video game apparatus having one or more display screens, a mechanical game having playing pieces and/or other moving mechanical parts, a personal computer system, a "network computer", a television including or connected to a microprocessor (e.g. a "set top box") for Internet or other information access, or other apparatus.

As described herein, the game unit 10 is used by a player in a "gaming environment." This term is intended to refer any location, public or private, in which games can be used. For example, public gaming environments include such places as arcades, stores, restaurants, bars, casinos, bowling alleys, stations, hotels, airports, airplanes, cruise ships, gymnasium, health club, or other public place that can offer the game unit for use by players and which can provide prizes to players of the game apparatus. A "gaming environment" need not ordinarily provide games to the public. In other embodiments, a "gaming environment" can be a private place such as a player's home or personal residence, office or other place of employment, private club, etc.

Game unit 10 in accordance with the present invention may include a game processor 12, monetary input device 14, player input device(s) 16, game output device(s) 18, a universal ticket dispenser 20, a specific prize ticket dispenser 22, and a communication device 24.

Game processor 12 implements (e.g., controls, influences, coordinates, monitors, calculates, etc.) the functions of the game unit 10 during a game process and includes several input and output functions. The game processor controls the game apparatus by receiving inputs from a player, from other game apparatuses, from a server (described below), from a progressive bonus apparatus, and from other sources. The game processor also controls output signals to update the game process when appropriate. In addition, the game processor implements features of the redemption system of the present invention by calculating when prizes are awarded, calculating and updating prize lists and prize costs, and other functions as described below. Game processor 12 preferably includes a digital microprocessor or similar

controller device, and other electronic components which are described in further detail with respect to Figure 1a. The operation of game processor 12 is described in greater detail below. The game processor is preferably provided within a housing of game unit 10.

Monetary input device 14 is used to receive monetary input that is inserted by a player into the game apparatus in the gaming environment. For example, coins can be received in return for the player's use of the game apparatus. A coin deposit slot can accept standard currency coins, bills, or game tokens that may be available in the gaming environment, and also typically includes a coin return button and coin return slot. Once one or more coins are accepted, the coins are routed to a cash box and a signal is sent to game processor 12 to increase the player's game credits, i.e., to indicate to that one or more game plays have been paid for. Coin slots and boxes suitable for use in game unit 10 are readily available on the commercial market. Alternatively, other monetary input devices can be used, such as debit card or credit card readers well known to those skilled in the art, or "smart card" readers which can read and write electronic information to and from the card. For example, "E-cash", "cybercash" or other electronic monetary forms can be used. In other embodiments, user verification or validation can be input by the player, such as a player identification and/or password that, for example, allows a monetary value to be billed to a player or deducted from a player's monetary account at a bank or other institution. Herein, the term "monetary input" is intended to also refer to other types of player validation for use of a game in addition to those forms mentioned above. In alternate embodiments located in non-public gaming environments (e.g., at a user's home), or for other applications such as promotional uses of game apparatus 10, monetary input may not be necessary for the player to use game apparatus 10.

Input devices 16 are used by a player or user to provide input to the game unit 10 to influence game events during a game process and to achieve one or more predetermined goals or tasks for scoring points and winning prizes or other types of awards. The input devices 16 can also be used to select prizes within the redemption system of the present invention. Alternatively, separate input controls can be used for the prize functions of the game unit. Player input typically includes game commands provided by controlling devices 16 such as buttons, keyboard, dials, joystick controls, touch screen, track ball, mouse, gun device, steering wheel, foot pedals, speech input through a microphone, or any other input used in playing a game and providing selections. For example, the player can press a button to tilt a playing surface to guide a playing piece, move a joystick to control a graphical object displayed on a video screen, or toss a playing piece into a target aperture having sensors to detect the presence playing piece. Each type of user input can provide a particular game command to the game processor 12, and the game processor interprets the commands and

influences game states and game events in the game process accordingly.

Preferably, game unit 10 implements, a "game of skill", i.e., as referred to herein, a predetermined goal, task, or objective for a game should be accomplished in a skillful manner such that an outcome of the game is determined primarily by the amount of skill of the player. The greater the player's skill, the closer or more easily a desired goal in the game can be reached by the player. Points associated with the predetermined goals or objectives can be added to a game score such that a higher game score, on average, indicates a greater amount of skill by the player. For instance, a displayed object can be skillfully aimed or directed using input devices 16 such as a joystick, buttons, steering wheel, etc. into or to avoid other objects using skill or dexterity involving hand-eye coordination.

Alternatively, a "game of chance" or other game that does not rely primarily on the skill of the player can be offered on game apparatus 10. For example, such games as slot machines, substantially random card games, roulette and the like may offer a player a chance to win large numbers of tickets or prize credits or other prizes of high value without requiring a high degree of skill.

Various other types of devices can also be included in game unit 10 as input devices 16 to allow the processor 12 to monitor the game. For example, sensors of various types can be employed to detect the paths of playing pieces directed by the player, detect when playing pieces have been dispensed, detect when a game is over, detect cheating actions by the player, etc. Also, input devices such as buttons, switches, etc. allow the player of the game to make various selections concerning game play. For example, a player could select to start a game, a one- or two-player game, a preferred award type, a progressive option, etc. using controls on a front panel of the game unit 10.

Game output devices 18 may influence the game and/or provide feedback to the player about the current state of the game process. For example, motors or solenoids can influence mechanical components of the game in response to player commands, such as tilting a playing surface, dispensing a playing piece, spinning a wheel, etc. Feedback is perceived by the player preferably in the form of visual, auditory, and/or tactile feedback. A video display screen can provide visual feedback such as images to the player during the game process. Other visual output devices can include one or more score displays, lamps or other light sources positioned on or surrounding a "game space" (e.g., a play field or area of game action). Game output devices such as speakers, buzzers, alarms, and other devices provide auditory feedback such as sound effects during a game process, synthesized or recorded speech, etc. Game output devices such as motors, solenoids, or other actuators can provide forces on the game apparatus or on controls handled by the player to provide tactile

feedback in the form of vibration, jolts, etc. One or more of the game output devices can also be used to display information related to specific prizes that can be won by the player when using the game unit 10, as described below. Game output devices 18 can also include a coin return slot for returning coins or tokens or providing other cash prizes after a game is played.

5 Game processor 12 preferably commands such feedback to the player by sending out control signals to the various output devices in game unit 10 when appropriate.

A preferred output device is a display screen 56. Game processor 12 utilizes appropriate display drivers, graphics chips, and/or other well-known components to display and update images on the display screen for implementing a game and providing information

10 for the redemption system of the present invention, as described below.

In a typical game process of game unit 10, a series of game states occur until a game conclusion is reached. The player can influence game states with game commands, but game states will often also change without any user input, such as when a time limit expires. The game conclusion can be triggered by a particular game state or other condition. At the game

15 conclusion, the player's performance and/or skill in the game is preferably related back to the player using one or more output devices 20 in a form such as game score and/or prize credits. For example, the player's performance in the game can be determined by checking if the player achieved a predetermined goal or task during the game.

Universal ticket dispenser 20 can be included in game unit 10 used to dispense

20 universal tickets or other universal vouchers to a player. The universal vouchers are used to redeem prizes available in the gaming environment. For example, tickets can be dispensed from ticket dispensing mechanisms well-known to those skilled in the art.

The universal tickets and other vouchers dispensed by dispenser 20 are referred to herein as "tickets" or "universal tickets." These types of vouchers are generic and not specific to any prize, and can be accumulated by a player and used to redeem one or more of several prizes available to the player. For example, in a standard redemption game arcade, players of games in the arcade receive all the same type of universal tickets from the various games at that arcade. The operator of the arcade provides a separate prize display booth or prize vending machine which accepts the universal tickets as currency in exchange for one or more prizes. In some embodiments, each of the tickets dispensed by dispenser 20 is equal to one prize credit accumulated by the player during a game. Some gaming environments provide universal tickets which may be exchanged for prizes only at one or more limited locations.

The term "prize", as used herein, is intended to generically refer to any merchandise,

souvenir, food item, or other physical goods or services which can be offered to players of redemption games and which have value other than as a medium of exchange for use in the gaming environment. A can of soda, slice of pizza, radio, stuffed animal, toy model, coupon for monetary value outside the gaming environment, gift certificate, cash, and free games to be played on game unit 10 are all examples of "prizes." A prize might also be a promotional coupon, which can encourage players to return to the current gaming environment or location more quickly in the future. For example, a promotional coupon can be dispensed as a specific prize ticket (see below) which offers a player a free pitcher of beer if the player returns and redeems the coupon within 1 week (or whatever free item the operator desires).

5 Redemption tickets or specific prize tickets would not be considered a "prize" since these tickets can be used in the gaming environment (such as an arcade) to redeem other types of prizes. In arcade-type gaming environments, each prize typically has a cost or value associated with it, specified as an amount of universal redemption tickets (or prize credits). The more valuable the prize, the greater number of tickets or prize credits is typically

10 required to redeem that prize. For example, a small toy car prize might have a requirement of 20 tickets, while a large stuffed animal prize might require 1000 tickets for exchange. Since a player can view the prizes and their associated costs in universal tickets, the player can play various games in the arcade until the desired number of universal tickets have been accumulated. The use of a universal ticket allows the operator to provide a specialized

15 "currency" which the players must use to exchange for prizes at the arcade. Other types of objects or items can also be dispensed and used as universal vouchers, such as plastic or cardboard chips, tokens, etc., or even coins or other currency.

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The amount of universal tickets dispensed to the player is typically based upon a game score or other result of a game process. In addition, special or progressive goals may be achieved by the player to win an additional or specified number of universal tickets. In the preferred embodiment of the redemption system, "tickets" or "prize credits" are used as a medium of conversion from game score to prize value. Actual physical universal tickets may never be dispensed to a player if the player uses his or her ticket winnings to directly purchase a prize within the redemption system. The selection of prizes in the present

25 invention is described in greater detail with respect to Figures 5 and 6.

30

The game processor 12 can issue commands to start the dispensing of tickets, dispense a particular number of tickets, and stop dispensing tickets. The tickets are stored in a storage area, such as a receptacle behind a front panel of the game unit 10, as is well known to those skilled in the art. In other embodiments, no universal dispenser 22 is included in

35 game unit 10 and prizes are redeemed solely by the use of specific prize tickets (described below) or other means.

Specific prize ticket dispenser 22 is optionally included in game unit 10 to dispense special tickets, coupons, or other vouchers for specific prizes to the player of the game unit. Specific prize tickets are to be distinguished from the universal tickets described above. A "specific prize" or "instant prize", as referred to herein, is a particular prize or type of prize that a player can be directly and immediately awarded and, in many cases, can immediately receive due to a particular winning result on game unit 10. Preferably, the player redeems the specific prize by paying an appropriate specific prize ticket to an operator, vending machine, etc., that the player received from ticket dispenser 22 based on a particular winning result on the game unit. A "specific prize ticket", "specific prize coupon" or "specific prize voucher", as referred to herein, is a ticket, coupon, or other physical or electronic voucher that can be exchanged for the specific prize only, and cannot be exchanged for other types of prizes or accumulated to purchase several types of prizes. For example, paper or cardboard tickets, special metal, plastic, or cardboard coins or tokens, smart cards, etc., can be used as "specific prize tickets" and dispensed or output from specific prize ticket dispenser 22.

In the preferred embodiment, a specific prize ticket refers to an associated specific prize in some way and has a standardized format that is recognizable and verifiable by the prize supplier or operator. The specific prize ticket thus verifies that the player legitimately won a prize from a game unit 10 within an operator's control or knowledge. For example, a specific prize ticket can include on its face a text description and/or a pictorial description of the particular prize won, such as a slice of pizza or a stuffed animal. The player can turn in the specific prize ticket to a display booth, other prize area, attendant, bartender, waiter, etc. and receive the specific prize referred to on the specific prize ticket. In other embodiments, the player who won a specific prize can send in the specific prize ticket or other voucher to a prize distributor or seller and receive a prize by mail or other delivery service. In still other embodiments, the specific prize ticket can be provided in electronic form as, for example, bits or other data to be stored on a storage device or medium. Alternatively, the specific prize ticket can simply designate that it is a specific prize ticket and not a universal ticket, and other operator-determined factors can determine which particular prize can be redeemed by the specific prize ticket. For example, a specific prize ticket can display the words, "Can exchange only for a specific prize. See operator for the prize won." When this ticket is brought to a cashier or operator of the arcade or other gaming environment, that operator can determine which particular specific prize has been won by the ticket. The specific prize won might depend on a variety of factors, such as the day of the week or other time period, the particular game apparatus that dispensed the specific prize ticket, a promotional offering, the identity of the user, the physical location of the game apparatus (address, city, etc.), or any other factors as desired by the operator of the gaming environment.

Specific prizes and specific prize tickets offer a player greater excitement and involvement in a game by allowing large prizes to be won instantly without accumulating tickets, and also provide the game operator with promotional opportunities and simple verification that players have won particular prizes. An operator need not check the game to make sure the player has won a prize when the ticket provides simple means to show this information.

In addition, the promotional opportunities for the operator and other product/service suppliers are numerous when using specific prizes and specific prize tickets. For example, an operator of a gaming environment can make an arrangement with a product or service supplier to provide that supplier's brand name on specific prize tickets as part of the supplier's advertising and promotional campaign. A brand name of a beverage, toy prize, or other product/service, along with a stylized logo or trademark, may be valuable advertising space. Or, a coupon or gift certificate for a particular retailer or merchant might attract customers to that retailer. For example, movie tickets for a local movie theater (or amusement park, etc.) can be redeemed as prizes, or dispensed as specific prize tickets from game apparatus 10, as a promotion for a particular movie, ride, event, etc. Other advantages and aspects of specific prizes and specific prize tickets are described in greater detail below.

Specific prize ticket dispenser 22 is preferably a separate dispenser from universal ticket dispenser 20, although in alternative embodiments the two dispensers 20 and 22 can be implemented as a single dispenser. In a preferred embodiment, specific prize ticket dispenser 22 includes a printing device, such as a laser printer, ink printer, or thermal printer, that outputs a slip of paper including a text description and/or pictorial representation of the specific prize which can be redeemed for the ticket. This same printing device can also be used to print either universal tickets with markings/indicia or specific prize tickets with indicia specific to a specific prize that has been won by a player. Since players may try to produce counterfeit specific prize tickets/vouchers, the specific prize vouchers can be provided on specialized paper, cardboard, or other material and/or include special identifying marks, code or password not easily reproduced. In some embodiments, the specific prize ticket dispenser can print a value or description on the specific prize ticket in standardized bar code format which can be read by standard bar code readers. For example, a specific prize ticket awarding \$1.00 off the price of a product can be printed with the appropriate bar code and thus can be accepted by any retail establishment able to read bar codes on products. The specific prize ticket dispenser 22 is controlled by game processor 12 similarly to dispenser 20 described above.

In alternate embodiments, no universal ticket dispenser 20 is included in game unit 10 so that only specific prize tickets can be dispensed and exchanged for prizes. This

embodiment offers the operator the advantage in that a whole price structure for prizes need not be maintained in a prize booth or other display area. These features reduce the operating and maintenance costs of implementing a redemption system. Alternatively, the specific prize ticket dispenser 22 can be used in place of universal tickets and the universal dispenser 5 by dispensing a single ticket "receipt" that has a universal ticket value printed on it. Players can thus save receipts indicating how many tickets they have accumulated rather than saving large numbers of universal tickets.

In still other embodiments, game unit 10 does not include a specific prize ticket dispenser 22. Specific prizes can still be won by a player using the game unit 10, but the 10 prizes are claimed and received in some other manner than by ticket redemption. For example, when a player achieves a predetermined task on game unit 10 to win a specific prize, a message is displayed on a display screen or other output device indicating that the specific prize has been won. That message can be "frozen" or displayed until an operator or prize supplier gets a chance to see the message and personally verify that the prize has been 15 won. The specific prize can then be given to the winning player. The operator can then reset the game to remove the prize message so that players can continue to play the game. Alternatively, the operator can have access to a central computer or game that is linked to game unit 10 through communication device 24 (described below), such as the computer that implements a tournament score, and remotely verify that the a specific prize has been won 20 and reset the game apparatus from the central computer. In yet other embodiments, the dispenser 22 is provided separately from game unit 10 and is linked through communication device 24 to receive prize information through electrical connections. In this way, a small number of centralized prize dispensers 22 can service a larger number of game units 10 all linked to the central dispensers.

25 In other embodiments, a player can insert a card or other medium which stores electronic data into a suitable output device 18. The game unit 10 then can write electronic data on the medium indicating the specific prize that was won by the player, and/or indicating a number of tickets or prize credits which the player has won. The player can then take the card and insert the card into a suitable card reader connected to a prize selection 30 apparatus (prize selection is described in greater detail below). The prize selection apparatus can be a game unit 10, or a separate "prize center" which can be used solely for prize selection.

Communication device or link 24 can optionally be included to allow game unit 10 to 35 communicate with other game apparatuses or with other computing, storage, and/or processing devices, such as a progressive bonus apparatus or server, described below. For example, a separate progressive bonus apparatus can be provided which is connected to

multiple game units 10 through communication devices 24. Each individual game unit 10 contributes to a collective progressive score that is stored and displayed by the bonus apparatus. The progressive score, for example, can be incremented with every coin inserted in input device 14 of any linked game unit, or automatically incremented over time at regular 5 or random intervals, manually incremented by an operator of the progressive apparatus, incremented when specific goals in a game are reached, etc. The progressive score is accumulated from the current and previous games that have been played on the linked game units 10. The first player that achieves a predetermined progressive goal on any of the linked game apparatuses wins the progressive bonus score, where the progressive score is added to 10 that player's game score and thus allows that player to win a greater number of universal tickets (prize credits) and/or specific prize tickets that may be associated with the progressive score. Alternatively, an individual progressive score can be accumulated on a single, individual game apparatus 10 and displayed on a progressive score display separate from a game score display. For example, the individual progressive score can be incremented by a 15 predetermined amount each time a player inserts a coin in a coin slot.

Communication device 24 can also be used to communicate directly or indirectly with other game units 10 and other processing devices to allow multiple players to participate in a game process. For example, one game unit 10 can allow a player to control one player-controlled object in a video game, while a different game apparatus linked through 20 communication device 24 can allow a different player to control his or her own object in the same video game. Such linked apparatuses can also be used in quiz-type games, for example, in which players simultaneously or successively compete to hit a button to answer a question, score points, etc.

Communication device 24 can also be used to allow game unit 10 to communicate 25 with an operator, server, or other central controller that regulates and coordinates prize distribution to game apparatuses linked to the controller in the current redemption system. For example, an operator in a game arcade can input a desired prize that will be associated with a specific prize ticket. This input information is communicated to the linked game apparatuses, allowing those linked game apparatuses to dispense a specific prize ticket that 30 displays the prize that the operator entered. Similarly, the linked game apparatuses can communicate information to a tournament server, for example, that assists the operator or the server in operating the games or tournaments. For example, a linked game unit can inform the operator or server when specific prizes are won and the type of prize won, how many 35 specific prize tickets have been dispensed over a predefined time period, how many universal tickets have been dispensed, how many progressive bonus awards have been won, etc.

Communication device 24 can be implemented as any one of many devices well

known to those skilled in the art. For example, device 24 can be a network interface card coupled to a main bus of the system, a telephone modem, a cable modem, a direct network connection, or other device for communicating information according to standard network or modem protocols. Alternatively, device 24 can be a wireless transmitter/receiver for 5 communicating without the use of cables or wires, e.g., using infrared emitters and detectors, broadband RF communication, etc.

FIGURE 1a is a block diagram of a preferred game processor 12 of Figure 1. Game processor 12 receives signals and commands from the player input devices 16 and translates/interprets those signals and commands so that the game process can be updated. 10 Game processor 12 preferably includes a microprocessor 28, random access memory (RAM) 30, read-only memory (ROM) 32, and input/output (I/O) 34. Microprocessor 28 can be any processor or controller with features sufficient to control the game apparatus. For example, a suitable microprocessor for many mechanical game applications is the Intel 8031 8-bit microprocessor. Alternatively, more powerful microprocessors, such as Pentium- 15 class/Power PC class microprocessors, or specialized graphical or digital signal processors, can be used. Microprocessor 28 executes a process, described by software instructions stored in memory, which recognizes a game command from player input devices 16. The software instructions can be stored in a "computer readable medium", which, by way of example, includes memory such as RAM and ROM, magnetic disks, magnetic tape, optically readable 20 media such as CD ROMs, semiconductor memory such as memory chips or PCMCIA cards, etc. In each case, the medium may take the form of a portable item such as a small disk, diskette, cassette, memory module, etc., or it may take the form of a relatively larger or immobile item such as a hard disk drive.

Microprocessor 28 is coupled to RAM 30 by a data (D)/address (A)/control (C) bus 25 36 to permit the use of RAM for scratch-pad memory and other functions during a game process. ROM 32 is preferably an erasable, programmable read-only memory (EPROM) that contains the start-up instructions and operating system for the microprocessor 28. Much of the instructions to implement the process of Figures 5 and/or 9 can be stored in ROM 32. Methods for coupling RAM 30 and ROM 32 to the microprocessor 28 by bus 36 including 30 data, address, and control lines are well-known to those skilled in the art.

I/O 34 includes buffers, drivers, ports, registers, and other analog and/or digital circuitry to interface inputs and outputs with the bus 36. Game output devices 18 and input devices 16 can be coupled to I/O 34. For example, a display screen can be coupled to I/O 34 so that the microprocessor or another video processor can control the display of images on 35 the display screen, as is well known to those skilled in the art.

Game processor 12 can be implemented as part of a control system including other electronic components (not shown). Besides the components of game processor 12, the control system can include operator-configurable controls to provide selectable game functions such as the amount the score is incremented for certain player actions or 5 commands, the amount of prize credits awarded based on the score, the speed and/or difficulty of game play, the conditions required to add to the game score and/or receive universal or specific prize tickets, the conditions required for a player to win a progressive bonus award or enter a tournament, etc. These factors can affect the difficulty of the game and the amount of tickets/vouchers received by players. Other functions selectable by such 10 controls can include sound effects, a test mode, the type of game, and so on. Alternatively, these functions can be selected from another input device, such as a control panel or keyboard of buttons, or through software commands to the microprocessor 32. The game processor can also include other components, such as a sound chip, audio amplifier, and speaker.

15 The game processor 12 can also be implemented within a standard personal computer, workstation, network computer, or similar device. The computer can include plug-in interface cards such as video cards, 3-D graphics cards, sound cards, controller cards, etc. Standard peripherals can be coupled to the I/O 34 as input devices 16 and output devices 18, such as a CD-ROM drive, storage device (floppy disk drive, hard disk drive, etc.), 20 PCMCIA card, printer, stylus and tablet, microphone for voice recognition, camera, or communication device 24.

FIGURE 2 is a perspective view of one embodiment 50 of game unit 10 which can include the features of the present invention to implement games and a redemption system. Game unit 50 is a multi-function game station or game console which is intended to 25 implement multiple types of games using one apparatus, as described below. Game station 50 includes a housing 52, player controls 54, display screen 56, coin slot 58, speaker 59, and specific prize ticket dispenser 22 (a universal ticket dispenser 20 can also be included in other embodiments).

Housing 52 encloses and supports the components of the game unit 50. Player 30 controls 54 allow a player to provide player input as described with reference to Figure 1. The player controls preferably include a number of buttons 60 and a track ball 62. Buttons 60 can be used by a player to input selections or actions offered during games. For example, during a poker-style game showing a hand of cards, each button 60 can be associated with a particular card and the player can hold or discard a card by pressing or not pressing the 35 associated button. Track ball 62 allows a variety of control options in several types of games. For example, the track ball allows a player to easily select certain areas displayed on

display screen 56 with a player-controlled cursor. Alternatively, many other types of player controls can be used. For example, display screen 56 can be provided as a touch screen for reading the positions of objects that contact the screen. This allows players to select objects displayed on the touch screen by pressing a finger directly on the screen at the positions of the displayed objects, as is well known to those skilled in the art.

Images can be displayed and updated on display screen 56 by game processor 12 or other controllers by methods well known to those skilled in the art. Coin slot 58 is provided for the player to insert one or more coins before starting a game and can be implemented as described above. Other monetary input devices, such as card readers, can be provided in other embodiments. Specific prize ticket dispenser 22 is implemented as described above. Depending on the location of the game unit 10, a universal-ticket dispenser 20 may or may not be included. In standard redemption game environments, the dispenser 20 can be provided as described above. In some non-standard gaming environments, such as bars, restaurants, stores, etc., it may be more appropriate to have only a specific prize ticket dispenser in game unit 10 since a prize display area may not be present in the non-standard gaming environments.

Alternately, other input and output devices can also be included in game unit 50. For example, a card reading/writing device, a video scanner, a video camera, a microphone, a dollar bill acceptor, personal digital assistant interface port, or other devices can be provided to allow a player to input data from various sources and to allow the game unit to output prize information in a variety of forms.

Multi-use game unit 50 can be used in a variety of gaming environments. For example, game unit 50 is small enough to be easily located, thus allowing the game unit to be provided as a "bar top" game in a bar, restaurant, or similar environments and locales. The 25 redemption system of the present invention can thus be used in these non-traditional environments, where redemption games have not been used previously. Game unit 50 can also be used in environments such as a gaming arcade. Also, environments such as casinos can use game unit 50 as shown in Figure 2 or in modified form.

The bar top game 50 can offer one of several different types of video games utilizing 30 images displayed on display screen 56. Some examples of games are described in greater detail below. Players can select buttons 60 to pick cards in a hand or displayed cards, for example. Likewise, trivia or quiz-type games are popular in bar type environments, where trivia from a range of subjects can be posed as questions for players and where players can select specific buttons 60 which correspond to displayed multiple choice answers; or players 35 might speak an answer in a microphone if game apparatus includes a speech recognition

device. In addition, video games which allow high player involvement can be implemented on game unit 50. Memory games, timed games, knowledge games, and sports games such as basketball, golf, and the like can be provided, as well as other types of video games.

5 In one embodiment, game processor 14 can include a well-known microprocessor such as a Pentium-based microprocessor, as well as additional components necessary to implement popular computer platforms. Software that can be implemented on the Pentium microprocessor can thus be provided on multi-use game unit 50. This allows a wide variety of available games to be provided on game unit 50. Preferably, the player can select one of several offered games to play using player controls 54; the monetary amount required to play 10 a certain game can vary depending on the type of game selected.

15 Multi-use game unit 50 is also ideally suited for linked or networked game play utilizing a communication device 24 as described with reference to Figure 1 to create a multi-apparatus game system. A single game unit 50 can be linked with one or more other game units 50 to allow multiplayer games, as described in greater detail below. For example, game 20 unit 50 can include a "network computer" which typically includes lower cost components than stand-alone PC's and which can utilize processors and software over a network to do many of computing tasks for the user of the computer. When provided as a network computer, game unit 50 can be initially provided as a stand-alone device which is not networked, and then eventually can be easily upgraded to intra-site and inter-site gaming systems, as described with reference to Figure 3.

In addition, universal tickets can be won and dispensed from game unit 50 similarly to the embodiments described above. A prize selection menu, as described below with reference to Figure 6, is also well suited for game unit 50 since the player can easily select a desired prize from available lists or menus displayed on screen 56 using track ball 62.

25 FIGURE 3 is a block diagram showing an embodiment 100 of the present invention for implementing networked game units with the redemption system of the present invention. Individual game units 10a and 10b are described above with reference to Figure 1, and may take the form of game unit 50 of Figure 2 in appropriate embodiments. Each game unit 10a and 10b accepts monetary input 104, such as coins, tokens, a debit card, a credit card, smart 30 card, or other forms of monetary or validated input. Each game unit 10a and 10b allows a player to participate in a game of skill implemented on the game unit after the monetary input is received. Each game unit 10a and 10b is also preferably capable of dispensing an award 106 to a player in accordance with his or her performance in the game. This performance is typically indicated by a game score. Such award can be a specific prize ticket or coupon, 35 universal tickets, smart card electronic data, etc. Alternatively, awards can be provided in

other ways as described herein.

Each game unit 10a and 10b may be coupled to a server 108 by a bus 110. The server 108 can be a separate device or apparatus which includes a controller such as a microprocessor and/or a storage device such as a hard disk drive, memory devices, etc.

5 Server 108 can include a microprocessor similar to game unit 10 described above, and may also include input and output devices. For example, the server can be one or more personal computers, "workstations", mainframe computers, or other types of computer or processor. The game units can be electrically coupled by cables or wires and otherwise be physically separated from the server, or the game units can be physically coupled to the server. The 10 game units can include appropriate network software to implement required communication protocols, as is well known to those skilled in the art.

Alternatively, the server 108 can be provided in one of the game units 10, or a server can be included in each game unit 10 and linked to each other by busses 110. Additional game units 10 can also be coupled to the server similarly to game units 10a and 10b. Game 15 units 10a and 10b can alternatively be directly coupled to each other without the use of a server 108.

In addition, one or more separate prize selection units 11 can also be coupled to server 108 and/or to game units 10a and 10b in the game system 100. Unit 11 allows a player to select a prize in the redemption system using prize credits won from playing a game 20 in the redemption system. Unit 11 can be an apparatus similar to game unit 10 or 50 except that it need not offer any games for players to play. The prize selection unit 11 can receive a player's prize credit information from server 108 or a game unit 10a or 10b and display a prize selection menu on a display screen as described with reference to Figure 6. The player 25 can select one or more prizes using input controls of the prize selection unit, such as a track ball, mouse, buttons, keyboard, etc. The prize selection unit can then dispense a specific prize ticket, order a prize from a prize distributor, dispense a prize from its own storage area, etc. Alternatively, the unit 11 can include a reading apparatus that accepts a storage medium from a player, such as a smart card. The unit can thus read a player's prize credits from the storage medium and allow a player to select a prize.

30 In one embodiment of Figure 3, the game units 10a and 10b and server 108 are an "intra-site" gaming system, i.e., the units and server are provided at a single location or gaming environment. For example, a local area network (LAN) can be implemented at the particular site to link only those game units at that site, and where the server 108 is a central computer or game apparatus that stores central data and coordinates prize information, 35 networked game processes and/or tournaments. Or, existing phone lines or other network

lines can be used to connect to a dedicated server that is used only to implement the games and tournaments at the single site. For example, a server 108 can be accessed by game units 10a and 10b using a modem and phone lines or TV cable lines, but the server 108 need not be connected to a large scale network (such as the Internet). Also, the game units and server can 5 be networked at a single site using an "Intranet" that utilizes the same well-known protocols of the Internet, which is discussed in greater detail below. This allows Intranets to use same or similar server machine software and client machine software as are used in Internet applications.

10 Server 108 is used to coordinate games among one or more individual game units and/or provide information to linked game units. For example, the server can be used to control a networked game, where players on separate game units are simultaneously competing. For instance, a first player playing a first person point-of-view virtual reality video game on one game unit 10a can interact in "real time" with a second player of a second game unit 10b who is also playing the same game. The first player can view a computer-generated object that is controlled by the second player, and vice-versa. Alternatively, "non-real-time" games with players taking turns can be provided. The implementation of such 15 networked games is well known to those skilled in the art. Many players can be included in such a networked game, from 2 to hundreds or even thousands of players. Players can simultaneously compete to first achieve a goal or a predetermined task in the game that will 20 win them a specific prize ticket or universal tickets from dispensers 20 or 22. Server 108 can also be used to store a variety of games in electronic form and to download a game to a game unit 10a or 10b when that game is selected by a player of the game unit. The game would then typically be executed locally to the game unit 10a or 10b by game processor 12. Alternatively, if the network transmits data quickly enough, the server 108 can execute a 25 game and send and receive appropriate data between the server and game units.

30 Alternatively, game system 100 can be provided as an "inter-site" system, where one gaming environment or "site" can be linked to game units 10 at other gaming environments or sites (such as a bar down to the street, or a bar across the world) to allow additional numbers of players to interact and/or compete in networked games, tournaments, etc. Thus, for example, server 108 with game units 10a and 10b at one site can be linked to a different server 108 and game units at another site. For example, game units 10 or 50 at different sites 35 can be conveniently linked through a private wide area network (WAN) or an existing global network such as the Internet and/or the World Wide Web (described below), where the communication between different game apparatuses is accomplished using telephone lines, ISDN lines, direct-connect data lines, fiber optic lines, cellular phone or pager wireless receiver/transmitter devices, and/or other types of communication devices and channels. The

network can be a standardized network, such as Ethernet, and the game apparatuses can communicate using well known network protocols, such as TCP/IP, IPX, or other standards. Each site may include its own server 108 which is linked to servers 108 at other sites. Also, each server may be linked to one or more centralized servers at "central sites" which can coordinate information, rules, etc. between sites. Alternatively, each site may include only game units that are connected to one or more centralized servers located external to the game environments at different sites.

For example, a server 108 can be provided at each site and additional sites where games are desired to participate in the present prize redemption system, networked game, or tournament. Each server can send periodic update signals to other linked servers so that each server has the most current information regarding prizes, the state of a game, the number of participants in a tournament, the current tournament score, or other related information.

Game units 10a and 10b can likewise be linked to other types of computing and electrical devices through communication devices 24. Centralized servers 108 can monitor and coordinate games for several game units. A network connection to an existing large scale network allows the game units 10 to be additionally used as terminals for players or other members of the public to access information over the network. For example, track ball 62 of game unit 50 can conveniently be used by a player to move a cursor displayed on screen 54 to select different links to the World Wide Web, to either play a game or access information-related services.

The networked game units 10a and 10b and server 108 can be used to implement a centralized prize distribution system in the redemption system of the present invention. A list of available prizes and their prize costs can be stored on a server 108 or a centralized server 108 as described above, and this information accessed by game units 10a and 10b when needed. A prize selection menu can be retrieved by game units in the redemption system, as described in greater detail below.

The game system 100 can also be used to provide networked games between players of different game units 10 such as the real-time and non-real time games described above. In one embodiment, a new player might approach a particular game unit 10 and view a list of players displayed by game processor 12 which are currently playing games on game apparatuses that are linked to the particular game apparatus. The new player can select a game in that list to join that networked game or start up a new networked game of his own and wait for additional players to join.

Game system 100 is also well suited to implement tournament games. In one

embodiment, a tournament can be implemented on a single game unit 10, where players successively play games on the single game unit 10, and where each player's score or performance is stored, for example, in memory such as RAM 30 or on a different storage device coupled to the single game unit. Servers 108 are also well-suited for tournament 5 game embodiments. The single game unit 10 can be coupled to a separate tournament server 108, or the tournament server can be physically included within the game unit 10.

In another embodiment, linked or networked game units 10a and 10b provide a much larger base of participants in a tournament. A player may participate in the tournament from any game unit 10a or 10b that is connected to other game units in the tournament. Game 10 units 10a and 10b in a tournament can be provided at and linked together at one site as described above, and can also be linked to server 108. Similarly, other game units at different sites can also linked together and/or to a server 108. Server 108 may coordinate prizes between game units, or determine a tournament prize 112 at the conclusion of a tournament, similar to the embodiment 100 described above.

15 The tournament is over after predetermined conditions have occurred, which is described in greater detail below with respect to Figure 7. A tournament prize 112 is provided to winning players of the tournament who are determined according to predetermined rules or methods as described with respect to Figure 8. The tournament prize can be cash, physical prizes, tickets or other vouchers (such as specific prize tickets), or other 20 types of awards. The tournament prize can be dispensed to the player through an award-dispensing device of an individual game unit 10, or provided to the player externally. For example, an operator of the game tournament can manually provide the tournament award to the winning players. Alternatively, a player may be remotely awarded the tournament prize from a prize distributor, e.g., the player can be sent prizes through the mail or delivery 25 service, a player's bank account can be credited, etc.

FIGURE 4 shows a second embodiment 100' of networked game system 100. System 100' includes a wide area network (WAN) such as the Internet 130, and a number of game units 10 coupled to the Internet 130. For example, a first game unit 10a, a second game unit 10b, and a server 108, are coupled to the Internet 130. Multiple servers 108 can 30 also be provided with access to Internet 130 which are accessible by other computers and components connected to the Internet.

The Internet 130 includes a number of nodes 132 that are interconnected by data transmission media 134. These nodes are typically routers, switches, and other intelligent data transmission apparatus which route "packets" of TCP/IP information to the desired 35 destination. In some instances, the nodes 132 can comprise an Internet service provider (ISP)

136 which allows a client machine to access the "backbone" of the Internet. Alternatively, client machines and web servers can be coupled directly into the backbone of the Internet. The nodes 132 are most commonly routers built, for example, by Cisco Systems of San Jose, California. The Internet service providers 136 are typically computers such as workstations.

5 Game units 10a and 10b can be coupled to the Internet 130 with a suitable communication device, such as a network interface, telephone modem, cable modem, etc. The game units 10a and 10b can be considered, in the language of the Internet, to be "resources," and game unit can include its own unique Uniform Resource Locator or "URL." In one embodiment of the present invention, a client machine, such as game unit 10a or 10b, 10 sends a request for information, such as current prize costs, tournament score etc., residing on, for example, server 108. In some embodiments, the information on a server 108 or game unit 10 can be publicly available to anyone with Internet and World Wide Web access; for example, the current tournament standings or prizes provided by a game provider or operator can be posted on a "web page" on the world wide web. A game unit or other requesting 15 machine can send a connection request and a URL which specifies the address of the web page to the server 108. The server 108 then sends a web page written in, for example, HTML format back to the requesting game unit or client machine, where it is "cached" in the memory (typically the RAM, hard disk, or a combination of the two) of the game unit or client machine. In this embodiment of the invention, the image on a video display of the 20 game unit or client machine can be generated from the HTML web page file cached on the client machine. For example, a client machine can use a web browser such as Netscape from Netscape Communications or Internet Explorer from Microsoft Corp.

25 A game unit 10a or 10b may also request information such as a prize selection menu, as described below with respect to Figures 6b and 6c. The prize selection menu can be implemented as a "web page" in HTML or other standard formats. The most recently-updated prizes and their prize costs would be downloaded to client game units with the web page so that players could select desired prizes using prize credits won during previous games. This embodiment is suitable for game units 10a and 10b that are situated in public 30 places as well as non-public places such as the homes of players. In addition, game unit 10c can be coupled to Internet 130 similarly to game units 10a and 10b. Game unit 10c can be coupled to another game unit 10d by a LAN or other communication network.

35 In other embodiments, other well-known Internet protocols or languages can be implemented on servers 108, game units 10 and client machines. For example, information can be sent in Java from Sun Microsystems, ActiveX from Microsoft, and/or the Virtual Reality Modeling Language (VRML) in addition to HTML.

Using Internet 130 or a similar WAN, players at home can participate and interact in network games, prize redemption systems, and tournaments with players that are playing a game unit at a particular gaming environment such as a bar or arcade. In another aspect, a first game unit, such as game unit 10a, and a second game unit, such as game unit 10b, may 5 directly communicate with each other in standard TCP/IP protocol over the Internet 130. More particularly, game unit 10a can send information to the URL of the game unit 10b, and the game unit 10b can send information in standard TCP/IP packets to the URL of the game unit 10a. In this way, players of game unit 10a and game unit 10b can directly interact in games over the Internet 130. Of course, a server 108 can likewise directly communicate 10 information to a game unit 10a or 10b, or both units and the server can all interact.

FIGURE 5 is a flow diagram illustrating a preferred process 250 of the present invention for implementing a redemption system of the present invention on one or more individual game units 10 in the process of playing a game. The present process is also suitable for the embodiments of the game system 10 described with reference to Figures 3 15 and 4, and can also be applied to other embodiments as desired. Process 250 can be implemented by game processor 12 or other processors coupled to the game unit.

The process begins at 252, and, in a step 254, the process checks whether monetary input has been detected, such as a coin(s), token, credit card, debit card, etc. Game processor 12 preferably stores monetary input in various categories so the operator can determine the 20 amount of money earned by different games in particular time periods, and whether tournaments or single games earned more money. If no monetary input is detected, the process continues to check for monetary input. Once monetary input is detected in step 254, the process continues to step 256, where a game and/or information selection from the player is received and the appropriate selected game is selected from memory by the game unit 10. 25 For example, in one preferred embodiment, the game console 50 as shown in Figure 2 offers several types of games that can all be played on the same console 50. In other embodiments, only one type of game is offered per game unit. Information can also be selected about the offered games, prizes, events, etc.

One example of a display shell 270 on display screen 56 of the game console is 30 shown in FIGURE 5a. A number of options and displays are provided for a player, including game selections 272, a main display window 274, and other information options 276. A player can select a game by pressing a touch-sensitive screen at the location of the game buttons 272, or by moving a pointer over a game selection with track ball 62 or other control and pressing a button 60, for example, to select the desired game. Available games of the 35 described embodiment include arcade action type games, in which a player's dexterity may influence the outcome of the game and thus may influence the game score; card games, in

which cards can be provided randomly and a player can select and arrange cards according to game strategies; and quiz games, in which a player is typically provided questions to answer. Combinations of these types of games and a variety of other types of games can also be provided. Other available games can be displayed and selected using arrows 273. Visual 5 feedback from a selected game is preferably displayed in main display window 274 and can also be displayed in other windows or areas of display screen 56. In other embodiments, electromechanical games can be provided, in which game action is implemented with moving mechanical parts or components such as directed playing pieces (balls, rings, coins, etc.), tilting surfaces, moving targets, and the like, and may or may not include a display 10 screen 56 with a display shell 270. Such electromechanical games can include coin or ball roll down games, basketball games, rotating pointer games, etc.

Initial display 270 also shows a number of other controls 276 which a player may similarly select to obtain information about other aspects of the redemption system. Help button 278 provides information to the player about how to win and choose prizes, how to 15 accumulate prize credits, how to play the various offered games, etc. High scores button 280 provides the high scores of players for each type of game that has played on the displaying game console 50. Tourney leaders button 282 displays a screen of the current tournaments being provided and the current leaders in those tournaments. The tourney leaders screen is described with reference to Figure 8a. Win cash button 284 provides the player with 20 instructions and options on how to win money playing games. Other win and prize information can be similarly provided. The collect prize button 286, when selected, provides a player with a prize, such as a specific prize ticket, universal redemption tickets, or an actual prize. A prize display screen in connection with button 286 is described in greater detail with respect to Figure 6a.

25 Other displays are also provided on initial display screen 270. Game credits display 288 displays how many game credits the player has left and which typically corresponds to how much monetary input the player has provided (e.g., number of coins). Each game credit is equal to a fixed monetary value, such as 25 cents. Typically, each game offered on game unit 10 requires a predetermined number of game credits to play, and this number can vary 30 depending on the type of game played and the options selected for a game. In some embodiments, a player can store game credits and retrieve/use game credits from previous game sessions if a "game credit account" is implemented for the player, similar to the prize credit account described subsequently. Also, bonus or free game credits can be provided in a variety of circumstances, such as inserting a \$5 bill into the game unit, previously winning a 35 game credit prize, as a promotional exercise, etc.

Prize credits display 290 shows the number of tickets (also referred to as "prize
28

“credits” or “ticket credits” herein) that the player has won. These prize credits may have been won by the player after the most recent game or during the current game session, and/or can include prize credits stored up over previous game sessions. A “game session” is a continuous use of the game unit by the player and may include one or more games played; 5 for public game units, the game session may end when the player leaves the game unit. For implementations on a single game unit 10, prize credits may have been won by the player during previous game sessions when playing the game unit and which the player did not exchange for a prize (i.e., the player is “saving up” prize credits). In some embodiments, the individual game unit can store these previously won prize credits in a “credit account” with a 10 player ID (name, address, ID number, etc.) In networked embodiments such as shown in Figures 3 and 4, the server 108 can store the prize credits won by a player over previous game sessions and can send this information to an individual game unit when requested by the game unit, e.g., when the player associated with a credit account plays a game on the game unit. Thus, a player can access his or her credit account by playing any individual 15 game unit connected to the server that stores that player’s credit account information. In multi-server embodiments, the multiple servers can communicate the credit account information to each other so that the player can access his or her prize credits from any linked game unit.

Two or more players can also play games simultaneously, alternating, etc. on a game 20 unit 10. In such a case, each player can be provided with a separate prize credit display 290 to indicate that player’s winnings (and also a separate game credits display 288, if desired). Alternatively, the multiple players can compete for a single prize credit amount shown in display 290.

Initial display 270 also includes a display window 292 which can provide the player 25 with messages concerning prizes, options, tournament information, etc. For example, a message can scroll through the window in a right-to-left direction. Specific prizes winnable during a particular game can also be advertised or displayed in window 292. Main window 274 can also display game or prize related information, advertisements, promotions, etc. when no games are being played (or during game play, if desired).

A credit betting selector 271 allows a player to “bet” additional game credits for a 30 game to potentially increase the number of prize credits won for a game. For example, each time the player selects selector 271, the game credits applied to a particular game can be increased by 1. Preferably, the more game credits a player applies towards a game, the greater the potential award. For example, 2 game credits applied to a game that normally 35 only requires 1 will double the player’s prize credits won for a particular game score. In other embodiments, the second applied game credit might triple, quadruple, etc., the prize

credits won.

In alternate embodiments, the player may also be required to input some form of identification to access certain features of the game unit 10, such as a credit account storing previously-accumulated prize credits, a tournament, prizes to be sent to the player's address, etc. One convenient way to receive the player's identification is to require that players provide monetary input in the form of a credit card, debit card, ATM card and PIN number, smart card, etc. which includes an electronic form of identification. Alternatively, a player can enter a password or other ID using input controls 16.

Referring back to Figure 5, once the game and information selection is made by the player in step 256, the process continues to step 260, where the process checks for a redemption-type selection from the player. In the described embodiment, the player is offered a choice as to prize options when playing a game. The player can either choose to play a prize credit game (i.e., non-tournament game), where the player receives prize credits and/or specific prizes based on the score and other outcomes of the game; or, the player can choose to participate in a tournament when playing the selected game. In the described embodiment, a tournament player does not receive any prize credits based on game score but instead competes for a tournament prize with other players in the tournament, i.e., the player's score is placed on a tournament list of scores. If the player chooses the prize credit game, the process continues to step 264 to implement the credit game. This is described in greater detail with respect to Figure 6. If the player chooses the tournament game, the process continues to step 266, where the tournament game is implemented. The tournament game is described in greater detail with respect to Figure 7. The availability of specific prizes and tournament play on the game unit 10 tends to cause greater player interest and involvement and thus increases the game's earnings. In other embodiments, a player can win prize credits and specific prizes during a tournament game as well as a prize credit game. After step 264 or 266, the process returns to step 254.

In some embodiments, players can also be required to meet certain conditions before participating in a credit game or a tournament. For example, a player can be required to play a predetermined number of games (e.g., 5) on a game unit 10 before being allowed to participate in a tournament. A certain percentage of the money received from this predetermined number of games can be allocated to purchasing prizes for the winners or top players of the tournament. The number of times the player has played can be stored with a player identification on a storage device or in memory or at a central database accessible by game apparatus 100. Alternatively, the player must play the required number of games at one sitting before being allowed to participate in the tournament. Or, the player might be simply required to input a minimum amount of game credits (equivalent to playing a

predetermined number of non-tournament games) to participate in a tournament.

An example of a selection screen allowing the player to choose the type of redemption game is shown in FIGURE 5b. Main window 274 displays information about the selected game, which in this example is "Quiz Show." By selecting one of the buttons 304, 5 the player can select a prize credit game or a tournament game (the 1 and 2 player buttons preferably both select credit games). Other information can also be provided, such as a jackpot amount 306. As described in U.S. Patent 5,292,127, a progressive bonus jackpot can be available to a player who achieves a progressive goal during a game. The jackpot amount 306 informs the player how many prize credits would be won as a progressive bonus award 10 when a progressive goal is achieved during the game. The progressive bonus award was contributed to by previous players of game unit 10 and/or other linked game units. In some embodiments, the player can choose an option whether to play a game having a progressive bonus award available, or play a game not having a progressive award. The information displayed on main window 274 about a game, such as shown in Figure 5b, can also be 15 provided when the player selects the help button 278.

Between or during games, game units 10 such as game console 50 can display other information, such as promotions or advertisements. Such advertisements can include still shots, animation, movies, sound, etc. For example, FIGURE 5c shows a promotion for the bar advertising a particular future event at the bar to promote further interest from players. 20 Other similar promotions can include, for example, a "happy hour" when products are free or reduced in price, a sporting event such as a football game, etc. Preferably, the game unit 10 provides a simple interface to allow the operator to easily input promotional information.

Advertisements sponsored by companies, prize providers, or other sources can also be displayed and, in another aspect of the present invention, can be directly related to prize or game information. For example, FIGURE 5d shows a beer advertisement for a particular sponsor. This sponsor may have contributed to prizes available to players on the advertising game unit 10, so that the advertisement has a direct relation to prizes and can thus increase the effectiveness of such advertising. For example, windows 274 and/or 292 can display 25 promotions such as "Win 25% off a six pack of beer!" which might be won as a specific prize during a game on game unit 10. A dispensed specific prize ticket can include a bar code which the player can exchange as a coupon in a store to receive the stated discount on that particular brand of beer. A sponsor might also supply free games for players in exchange for displaying advertisements, or may simply pay the game operator for advertising time. Thus, using the linked advertising and prize redemption system disclosed herein, 30 multiple revenue streams from advertisers are offered to a game operator and also offer the sponsors more effective advertising.

FIGURE 6 is a flow diagram illustrating the prize credit (non-tournament) game implementation of step 264 of Figure 5. The process begins at a step 320, and in step 322, a game process is implemented. Once the player selects a start control, the game begins and proceeds according to a standard game process as modified by player input. For example, in a "Scud Attack" game, oncoming missiles are displayed on display screen 56 which the player attempts to destroy using track ball 62 and buttons 60, as is well known to those skilled in the art. In a solitaire game, cards are displayed on the display screen 56 and the player selects cards to place over other cards according to the rules of the game. In a quiz game, the player answers displayed questions using buttons 60 or other input controls. Many other types of games can also be provided as game unit 10 for use with the redemption system, such as mechanical roll down games, target games, etc. In step 324, the process checks if the game is over; if not, the game process is continued in step 322.

Once the game is over, the process checks in step 326 whether the player has won a specific prize (the process can also check for specific prize winnings during the game). If no specific prizes have been won, the process continues to step 328 to credit tickets (or prize credits) to the player or to the player's account, if such is implemented. The amount of prize credits already in the player's account were accumulated during previous games played by the player. The prize credits won from the current game are added to any existing credit balance and the total is displayed to the player. As described above, the credit account can be implemented on storage devices such as memory, hard disk, etc. either local to the individual game unit or on a connected server that links multiple game units. In some embodiments, a connected server 108 can be used only for credit account functionality, or it may also be a tournament server having tournament functionality. In the examples of Figures 5a and 5b, the total prize credits available to the player is displayed in window 290. In other embodiments, the player only accumulates prize credits during a single play session that continues as long as the player has additional credits to play (e.g., the player can insert additional monetary input during or between games to continue accumulating prize credits during a single play session).

FIGURE 6a illustrates an example display of score and prize credits (shows as "tickets") won by a player after a game is over. The score 362 of the game is displayed, followed by an optional speed bonus 364, which provides a modification to game score based on the time taken to play the game. For example, in some types of games, the shorter the time taken to complete a goal, the greater is the skill of the player. A score of higher value is awarded to reflect this necessary higher skill. In the described embodiment, a multiplier is applied to the score to achieve a total score 366. The total score is converted to a number of prize credits or tickets 368 that the player won; for example, a predetermined number can be

divided into the total score to achieve a number of tickets that is about equivalent to the player's score in terms of prize value in the scale of prizes offered by the redemption system. The number of game credits played 370 is the amount of monetary input provided by the player to play a single game; in the described embodiment, the number of game credits 5 inserted for a game acts as a multiplier for the tickets won from that game. Thus, the total number of tickets 372 is the number of game credits 370 multiplied by the won tickets 368. The total number of tickets 372 can be added to any preexisting ticket balance of the player, if appropriate. In alternate embodiments, there need not be a conversion of score points to prize credits; a game can simply have a game score in terms of prize credits or tickets.

10 In next step 330, the process checks whether the player wishes to choose a prize with his or her prize credits. If not, the player can simply end his or her game, with the newly-won prize credits added to his or her credit account that is stored on the game unit or a server (if applicable). Alternatively, the player can be dispensed a record, medium, or physical token in step 332 which allows them to retain their winnings externally to the game unit and 15 redemption system. For example, as in traditional redemption game arcades, the player can be dispensed a number of paper tickets proportional to the game score and/or proportional to the total prize credits won. Alternatively, the player can be dispensed a printed form, receipt or stub by a printer which indicates the amount of prize credits won. In yet other embodiments, the player can insert some form of electronic, optical or magnetic storage 20 medium, such as a debit card, magnetic disk, etc., into an appropriate reading device on the game unit. The amount of prize credits can then be written on the storage medium by the game unit and the player would retrieve the medium. Once the player received a record of their prize credit winnings, the game unit would no longer have any record of those 25 winnings. These latter methods may be the only way for a player to save up prize credits in embodiments that do not provide a stored credit account for each player. The process is then complete at 342.

30 If, in step 330, the player wishes to choose one or more prizes with his or her prize credits, then the process continues to step 334, where a prize selection screen is displayed. This screen provides a list of prizes that are available to players within the redemption 35 system of the present invention. The prizes are defined and organized completely within the system of the game unit so that the operator does not have to display physical prizes to players in the gaming environment in a separate booth or dispenser. In gaming systems that incorporate both game units 10 and servers 108, the prizes are organized within the system of game units and any connected servers. After the player has won prize credits, the player can conveniently select one or more prizes from a list presented on the screen, where all the information necessary is provided to the player. Thus, all redemption of prize credits for

prizes is performed electronically. This allows an operator to have much greater influence and control over the prizes that are available and the desired profitability of the redemption games. For example, the redemption system of the present invention allows players to select their prizes on the same game apparatus which the player played the game, and thus allows 5 the system to automatically and continuously update prize costs and specific prize win ratios according to monitored player performance to maintain a desired profitability of the game units. The prize system is described from the system's and operator's point of view with respect to Figure 9.

10 The prize selection menu is preferably displayed on the display screen of the game unit 10 or 50, but may also be displayed on output devices of other apparatuses, such as prize selection unit 11, server 108, client machines to the Internet, etc. When game unit 10 is a electromechanical game or other game typically not including a display screen, then a player will typically be required to select prizes from a separate unit 11 or similar device.

15 In step 336, the player inputs a selection of one or more prizes from the displayed list. Preferably, the player can select a desired prize using a touch screen, track ball 62, pointer, or other input device. Once the prize selection is received, step 337 is implemented, in which a specific prize ticket is printed and provided to the player. The specific prize ticket preferably includes a depiction of the prize or prizes selected by the player. Multiple prizes can be depicted on a single specific prize ticket, or a separate specific prize ticket can be dispensed 20 for each prize selected. Thus, in effect, the prize selected by the player through prize credits can be considered a specific prize or "instant prize" at this point in the process. Specific prizes are described in greater detail with reference to Figures 10-14 below. The specific prize ticket may be redeemed at an appropriate exchange center for the actual prize. For example, a prize exchange booth can be provided at a gaming environment such as an arcade 25 or bar, where an operator keeps an inventory of prizes and exchanges appropriate prizes for specific prize tickets. In other embodiments, the player can insert a card having the specific prize ticket information into a vending machine. In still other embodiments, the player can mail the specific prize ticket to a prize distributor.

30 Alternatively, the prize information describing which prize the player has selected is not printed on a specific prize ticket but is instead electronically routed to a distributor or to a dispenser directly over a network or other communication link. For example, in some embodiments, prizes can be delivered to a player from a central prize location, such as a warehouse. The selected prize information could thus be sent out via a network from the game unit to eventually be accessed by the prize distributors, who would send the desired 35 prize to the player's address or would send the prize to the location where the player played the individual game unit so that the player could pick up the prize. Alternatively, the specific

prize information can be written in electronic form to a medium such as a card, disk, etc., where the player can remove the medium and claim prizes at a different apparatus able to read the medium.

5 If the player has won a specific prize or "instant prize" in step 326, then the process continues to step 338, where the specific prize won is determined and displayed. Specific prizes can be provided in a variety of different ways. Specific prize goals during a game can be offered to allow the player to win a specific prize (rather than prize credits) by achieving a goal requiring skill (dexterity, experience, etc.) of the player, such as moving a controlled object to a specific target, choosing a particular combination of cards, etc. Alternatively, a 10 specific prize goal can be met based partially or wholly on random or statistical chance. The specific prizes that can be won during a game are preferably displayed to the player so that the player knows how to win the specific prizes. Also, once the player has achieved a specific prize goal, the actual specific prize won can be determined in predetermined fashion or randomly from a prize table or other list of multiple possible specific prizes. The 15 determination of a specific prize from a table is described in greater detail with respect to Figures 9, 9a, and 14.

20 After or as the won specific prize is displayed in step 338, a specific prize ticket is dispensed to the player in step 340, similar to step 337 described above. The specific prize ticket includes a designation, such as a written description and/or picture of the prize won, so that the player may redeem the specific prize ticket for the desired prize. The process then continues from step 328 as described above and is complete at 342.

25 It should be noted that a player may win both a specific prize ticket and may also win prize credits during a game of Figure 6. For example, the player can achieve a specific prize goal during a game and win the specific prize, as well as scoring points and adding to game score to win prize credits. Thus, after (or during) a game, the player can receive a specific prize in steps 338 and 340, and also choose a prize in steps 334 and 336 based on prize credits won.

30 In alternate embodiments, actual prizes can be dispensed from the game unit 10 or from a dispensing apparatus that is located in the gaming environment. If available prizes are all small toys, cards, or the like, then the prizes can be stored in the dispenser and an appropriate prize corresponding to the player's selection can be dispensed.

FIGURE 6b illustrates an example of a prize selection menu used in step 334 of Figure 6. Main display window 274 provides a list 344 of prizes and also includes a prize cost or value 347 for each displayed prize. Additional prizes that may not fit within the

dimensions of the display screen 56 can be viewed by selecting page controls 345. In the described embodiment, a prize is identified by a text name/description in a table format. In other embodiments, other text information related to the prize can also be provided, as well as pictorial descriptions of prizes, as shown in Figure 6c.

5 A player can select any of the prizes for which he or she has enough prize credits as shown by window 346. Preferably, indicators 343 are provided to indicate which prizes can be "purchased" by the player with his or her current prize credit balance. Indicators 343 can take a wide variety of forms in alternate embodiments. A player selects a prize item using an input device, after which the selected prize is highlighted or marked to distinguish it from the
10 other prizes in the list, as shown by highlighted prize 348 and check box 349. The player indicates to the game unit that a selection is finalized by selecting the collect prize button 286.

15 In the preferred embodiment, the entire list of available prizes is displayed regardless of whether the player can afford the prizes with his or her current prize credits. This allows the player to view the whole range of prizes and decide whether to redeem a prize at the present time or to save prize credits and, after playing additional games, redeeming a prize of greater worth with a greater number of prize credits. In another embodiment, only prizes which the player can afford with his or her current prize credit balance are displayed by the game unit.

20 In other embodiments, a hierarchical prize menu system is implemented, in which categories of prizes are initially displayed and allow a player to select categories and sub-categories within the categories to narrow the choice of available prizes. For example, a player might select a "sporting goods" category to have a choice of sports prizes such as basketballs or other balls, athletic shoes, sporting goods equipment, etc., and then select a
25 sub-category of "baseball" to narrow the choices to baseball-related prizes. This is useful when a large number of prizes are offered by the redemption system.

30 In response to the selection of a prize by the player, the game processor 12 in a preferred embodiment commands the dispenser 22 to print out a specific prize ticket 62 that may be exchanged for the selected prize (and, preferably, no other prize). Thus, by allowing a player to select prizes using the game unit 50, no physical universal tickets 60 need be dispensed to the player. The only physical ticket needed by the player is the specific prize ticket 62 that can be exchanged for the actual prize. Alternatively, if the player does not want any of the displayed prizes, the player can opt to receive an amount of physical tickets from dispenser 22 or 20 equivalent to the prize credits won by the player. Or, the player
35 might decide to use prize credits to "buy" additional games on a game unit 10, e.g., convert

prize credits to game credits. Those bought game credits can then be stored in a "game credit account", if desired.

In addition, the operator can easily reconfigure the prize list 344 as required. For example, if a particular type of prize is out of stock, the operator can remove that prize from the list 344 so it is not offered to players. If a new type of prize is being offered, the operator can add prize items to the list 344. Adjustment of prizes is described in greater detail with respect to Figure 9.

The prize list 344 offers advertisers a way to link available prizes to advertisements displayed on the game unit. For example, a particular brand of fast food might be advertised on display screen 54 between games and promoted by informing players that that brand of food is available as a prize for playing the game. When prize list 344 is displayed after a game, items of the advertised brand of food, such as "McDonald's Big Mac" or "Burger King Whopper", are presented as selectable prizes, thus enhancing the advertising effect on the player.

In some embodiments, the player can optionally select a "save tickets" option in the prize selection screen (or the prize credits are saved in the player's account automatically), which will store the amount of prize credits won on a local or a remote storage device as well as identification information to associate the winnings with that player (name, address, etc.). For example, the prize credit information can be stored in a special account for the player that is kept by the operator of the gaming environment, by a more centralized service, or by the player himself on a writeable medium such as a smart card or printed ticket. When the player next plays a game apparatus that has access to the amount of prize credits previously won, the player can add any present winnings to previously stored winnings in the account and thus be able to exchange the combined amount of prize credits for a more valuable prize.

FIGURE 6c shows an example graphical prize selection menu 350 for an alternate embodiment of the present invention that allows a player to select prizes from game unit 50, 10, or other embodiments disclosed herein. Menu 350 can be displayed on display screen 56 or a different output device of the game unit.

Menu 350 portrays various prizes that are available to be exchanged for prize credits. Each prize can be displayed in its own selection box 352. A description 354 of each prize can include the name of the prize and/or any other information related to the prize. Pictorial information 356 preferably portrays each prize accurately and realistically to the player. Prize costs 358 preferably indicate the required number of prize credits to be redeemed for the player to receive the prize. The player can preferably select a displayed prize by moving

a cursor or indicator onto a box 352 or otherwise marking a specific box 352. For example, a currently-selected box 352a can be shown highlighted, in a different color, in inverse video, etc. The player can press a button 60 or other controls to select the desired prize. Or, the player might select a control such as arrows 360 to display a different "page" of prizes on the 5 display screen 56. The menu 350 can be displayed in a variety of formats and layouts in other embodiments.

In other embodiments of graphical prize menu 350, a 3-D environment can be simulated for the player to "explore." For example, a menu implemented in VRML over the 10 Internet can allow a player to enter 3-D "rooms" and view 3-D visual representations of prizes as they would realistically appear.

In addition, the operator can easily reconfigure the menu 350 of prizes as required. For example, if a particular type of prize is out of stock, the operator can remove that prize 15 from the menu 350 so it is not offered to players. If a new type of prize is being offered, the operator can add prize items to the menu 350. This can be accomplished by removing the prize from the menu through an attached keyboard or other input device; or, a controller linked to the game apparatus 10 through communication device 24 can be used by the operator to change the menu prize items remotely.

FIGURE 7 is a flow diagram illustrating step 266 of Figure 5, in which a tournament game is implemented. Tournaments can be implemented using a single game unit 10 or 20 using networked game units as described above. Players from gaming environments in several different locations can thus interact or compete simultaneously in offered games, or over a predetermined time period during which the tournament is open to players. Such large 25 scale networked tournaments can be administered and provided by services completely independent of the local gaming environment operator. For example, an independent tournament organizing service can implement a tournament from a central server computer that is linked to the participating game apparatuses. The local operator might get a percentage of the proceeds from the tournament for allowing game units 10 at his location to participate. The various options concerning tournaments as discussed below can be adjusted by the operator or prize provider, preferably by using a tournament table as shown with 30 respect to Figure 9a.

The process begins at 382. In step 384, at least a portion of the monetary input from the player is directed to a tournament prize. The tournament prize is contributed to by all the 35 players in the tournament. Thus, since it represents multiple contributions, the tournament prize can be worth much more than any specific prize a player might win from a single game, similarly to a progressive bonus score described above. For example, a game may cost \$1

that the player inputs into the game. A portion of this monetary input, such as 50 cents, is applied as a fee to play the game, like a normal redemption or arcade game. The other portion, 50 cents in this example, is applied to the tournament prize. Thus, each time this particular game is played in the tournament by any player, 50 cents is contributed to the tournament prize. This type of apportioning of the cost of the game allows part of the earnings of the game to be provided to the owner of the arcade or other location where the games are made available to the public, and also lets part of the earnings be apportioned to a tournament prize provider, who can be a separate entity from the arcade owner or operator.

In yet other embodiments, the tournament prize value can be increased or determined using other or additional criteria besides monetary input. For example, the tournament score's value might be based on the number of players in the tournament, the duration of the tournament, a predetermined number, the number of goals achieved during the tournament, etc.

The tournament prize can be an actual physical prize, such as a computer, stereo, etc.; or the tournament prize can be in a form of currency, such as prize credits, vouchers, or cash that are exchangeable for other prizes. For example, the tournament prize can be indicated in terms of monetary units, such as dollars and cents. In other embodiments, the tournament prize can be expressed as a number of points that have a correspondence to the amount of monetary value contributed to the tournament score by the game unit 10a or 10b. For example, every dollar of monetary value contributed by a game unit can be expressed as 10 points of tournament prize. Or, a tournament prize can be expressed in terms prize credits used on the individual game units 10a and 10b, allowing a winning player to select prizes using a game unit's usual prize selecting mechanism, described above with reference to Figures 6, 6b and 6c.

Since the tournament prize may be continually growing, its value must continually be updated so that players will know the most current prize value for which they are competing is displayed by the game unit. For tournaments implemented on one game unit, the only contributions in the tournament are received on that game unit, so the tournament prize is simply increased when a player on that game unit joins the tournament. On multi-game systems, the current tournament prize information is sent out to all the individual game units able to participate in the tournament. One or more servers can be used as described above, or game units can be interconnected and relay any updates to the tournament prize to each other.

In next step 386, a game process is implemented by the game unit, similar to step 322 of Figure 6. In step 388, the process checks whether the game is over. If not, step 386 is implemented until the game is over. In next step 390, the results of the game and any other

necessary information is added to a tournament list. The tournament list preferably includes all the players in the tournament by name or other identification and their associated game scores. In other embodiments, additional information can also be stored in the tournament list which can be used to help determine a winner or to provide statistical information for the 5 operator of the tournament. For example, the time the player took to play a game, the number of times a player has participated in similar previous tournaments, etc.

If a server 108 is being implemented, then the tournament list is typically stored on the tournament server. The game unit thus sends the game score to the tournament server over a network link. If the tournament is being implemented on a single game unit, the 10 tournament list can be stored locally on that game unit.

In some tournament embodiments, a player's identification need not be known. Each game score can be stored in the tournament list with an associated ID verifier that is assigned to the game score by the game unit or linked server. The ID verifier can be a number, word, symbol, etc. that is randomly generated or determined according to a predetermined pattern. 15 Once the ID verifier is determined, it is displayed to the player so that the player can later claim their game score. For example, a ticket can be dispensed to the player with the ID verifier on it. Once the tournament is over, the ID verifiers of the tournament-winning scores can be advertised, and the winning players can claim the tournament prize by presenting their ticket or by otherwise providing their winning ID verifier to the prize provider.

20 In other tournament embodiments, the tournament list of scores may only include the top n game scores, where n is a predetermined number of winners. In such an embodiment, a game score is not stored on the tournament list unless it is greater than (or equal to) the lowest winning game score already on the tournament list. Thus, the player need not provide any identification if his or her game score is too low. If a player's game score currently 25 qualifies to be on the tournament list, the player can provide identification. For example, the player might then enter his or her name, initials, etc. using an input device. Of course, later player's scores might cause previously-qualifying scores to be removed from the list when the previous scores are no longer high enough.

30 In step 392, the process checks whether the tournament is over. An individual game unit 10 can check for tournament conclusion by, for example, sending a request to a tournament server 108, which checks the tournament conditions and can send a response back to the individual game unit. Or, tournament conditions can be checked by a game unit implementing a tournament solely on that game unit.

There are several conditions which can be set by the tournament operator to cause a

tournament to conclude. A tournament can conclude based on time duration, number of players that have entered the tournament, amount or worth of the tournament prize, when a predetermined game score has been reached by one or more players, when a predetermined number of goals have been reached in participating games, when players/game units from predetermined locations have participated, when an event outside the tournament occurs (e.g., a football season ends, a world series concludes, etc.), when a predetermined number of minimum scores are achieved by participants in the tournament, or other conditions; or, a combination of two or more of these conditions can be applied.

For example, in a tournament server embodiment, a predetermined number, "n", of players can be allowed to participate in a tournament. When the last allowed player has finished a game, the tournament can be concluded. The tournament server 108 can store the number of tournament participants who have already completed their games and thus can easily determine when the nth player has participated. Other conditions can also be checked; for example, a tournament might conclude based on a condition of time duration of the tournament, where the expired time since the tournament began can be checked in step 392 (such a check can also be made periodically by the game unit regardless of player activity on the game unit). For example, a tournament might last one week, and then automatically end.

If the tournament is over in step 392, then the process performs step 394, where the tournament is concluded as detailed with respect to Figure 8. The process is then complete at 20 396. If the tournament is not over, then the process 380 is complete at 396.

FIGURE 8 is a flow diagram illustrating step 394 of Figure 7, in which a tournament is concluded. The process begins at 400, and in a step 402, the tournament score is assigned to the top player or players in the tournament list. Preferably, a predetermined number of the players with highest score in the list have "won" the tournament. For example, the top three 25 players, as shown below in Figure 8b, can be awarded portions of the tournament prize.

The tournament prize can be divided among the top tournament players in a variety of ways. In one embodiment, a predetermined proportion of the tournament prize is provided to the top players; for example, first place receives 60%, second place receives 30%, and third place receives 10% of the tournament prize. The operator or tournament organizer can 30 preferably alter these percentages as desired, as shown in Figure 9b below. Alternatively, the proportion can be determined by the difference between the top players' scores. For example, if the second place player's score is very close to the first place player's score, the tournament prize can be divided almost equally between these two players.

In step 404, the tournament results are communicated to individual game units that

participated in the tournament. These tournament results can be viewed by players to see who won the tournament. Game operators and/or tournament prize providers are also informed which players receive the tournament prize. Players may be required to return to the game unit 10 on which they played to see the tournament results and to determine if they 5 have won the tournament. Alternatively, the player might check any game unit (or computing device) that was linked to the tournament information through network connections.

Winning players can actually receive their portion of the tournament prize in several ways discussed above. For example, the prizes can be sent to the winners, collecting the 10 prize at the location where the game was played, receiving prize credits to select a prize using the prize menu, etc. A player that wins a tournament can also receive a specific prize ticket that can be exchanged for a valuable prize, such as a bicycle or \$200 worth of merchandise at a related retailer. The tournament prize offers another way for advertisers on game units 10 to provide brand-related prizes to players and to enhance the advertising effect 15 on players. For example, a bicycle company might advertise their particular brand of bicycle as a tournament prize.

In step 406, the tournament prize or score is reset. The process is then complete at 408.

In other embodiments, after a tournament is concluded, a player may be required to 20 play additional games to determine a winner as, for example, in elimination-type tournaments where players compete in successive rounds and are eliminated from the tournament after losing a predetermined number of games.

FIGURE 8a is a tournament standings display screen which is preferably displayed by the individual game unit after a selection of the tourney leaders button 282 or after a 25 tournament is complete. The tourney leaders button 282 is shown highlighted in Figure 8b to indicate that it has been selected. Main display window 274 displays a number of players, scores, and prizes for different games. For example, a tournament for the game "Scud Attack" is currently ongoing, and the window 274 lists the three players 420 who have so far achieved the highest scores in the tournament, the game scores 422 for each of the players, 30 and the cash prize 424 that each player would win if the tournament were to conclude with the current standings. In alternate embodiments, winners of a tournament can win prize credits or other prizes instead of cash. When the tournament has concluded, the main window 274 preferably displays "TOURNAMENT ENDED" or similar information to indicate that a player cannot join the tournament. Similar tournament standings are displayed 35 in window 274 for the game "Super Solitaire." Tournament standings for other games can be

displayed by selecting the next and previous page indicators 426. Preferably, concluded tournaments that have ended within a previous predetermined time period (such as within the last week, month, etc.) are still available to be viewed by later players of the game unit 10 to give them an idea what types of scores are typically achieved by players in a tournament 5 game and the amounts or types of prizes won by players.

FIGURE 9 is a flow diagram illustrating a process 440 of the present invention for allowing the operator of the game redemption system to adjust prize characteristics of the system. This process can be implemented on a game unit 10 utilizing the game processor 12 and other components; or, this process can be implemented on consoles, computers, or other 10 terminals separate from the game unit. The separate unit can then provide the prize table and other information to individual game units 10 over a network or other communication link; or, the operator can manually transport the prize information over a medium such as a magnetic disk or other storage medium. The process begins at 450, and in a step 452, a prize table is displayed for the operator.

FIGURE 9a is a diagram of an example of a prize table 480 for use with the present invention that is displayed to the operator in step 452. The prize table 480 is preferably displayed by a display screen such as screen 56 of game unit 10 or 50 so that the operator can adjust prize characteristics for that game unit and any linked game units, if desired. Alternatively, the prize table can be displayed on a separate operator terminal, computer, 20 server, or game unit that may be linked to game units 10. In such a system, the operator would modify the prize characteristics as desired and send any updated characteristics to all linked (or all desired linked) game units over a network or other communication device.

Prize table 480 of the described embodiment includes a list of available prizes 482, an actual cost 484 of each prize in list 482, the prize value 486 for each prize in list 482 in terms 25 of prize credits or tickets, the specific prize win percentage 488 for each prize in list 482, the prize credit global payout percentage 490, and the specific prize win percentage 492.

Prize list 482 includes a text name of each prize the operator wishes to include in the redemption system. Preferably, the operator can simply select a field of the table and enter a new prize name, change an existing prize name, or delete existing prize names. The operator 30 can input this information using such input devices as a keyboard, pointer mechanism, stylus, tablet, etc. Preferably, the operator lists prizes from the least worth to the most worth; or, the system can automatically sort the prizes in a preferred order. In alternate prize table embodiments, the operator can enter additional text description for a prize, such as physical dimensions, systems or standards with which the prize is used, color, or other characteristics. 35 In still other embodiments, the operator enter a graphical description of a prize, such as a

bitmap or other pictorial data format. For example, the operator can upload a graphical file to the redemption system from a personal computer. This would be more suitable for a redemption system having a graphical prize selection screen for players, as shown in Figure 6b. In some embodiments, the operator can provide descriptions of particular brands of 5 prizes in prize list 482 in exchange for advertiser money. The operator might also input specific advertisements to be displayed on game unit 10 and associate those ads to items in the prize list 482. In such an embodiment, for example, the game unit 10 can examine each prize item in prize list 482 and check if each prize item has an associated advertisement. If so, the advertisement can be displayed between or during games, along with the prize credit 10 cost of the associated prize, if desired.

Actual cost field 484 lists the cost of the associated prize which the operator or prize supplier has purchased and/or which the operator sells. For example, a pizza may be sold to 15 players for \$15.00 in a particular gaming environment, but the actual cost to the operator for making the pizza may be \$3.00, which is the price the operator would input to the table. Similarly, the operator or prize supplier may be able to purchase prizes in bulk for a significant discount, and that discounted price would be provided in the fields 484.

Prize cost field 486 lists the amount of prize credits that a player must pay to receive or purchase the prize associated with the prize cost. These costs are displayed directly on the 20 prize selection screen as described above. For example, to win a small pizza, a player must have at least 600 tickets or prize credits in his or her account, and to win a video game console, 20,000 tickets are required. Thus, more expensive prizes can be won less often 25 since they require greater amounts of prize credits to purchase. Expensive prizes such as a video game, bicycle, etc., typically cannot be bought from prize credits won at one game session (unless, e.g., a progressive bonus score is received or they are won as specific prizes), so players will have to save up prize credits for these prizes as discussed above. In the 30 preferred embodiment, the prize costs listed in fields 486 are determined by the redemption system based on other information that the operator has input, such as actual cost and global payout. This is described in greater detail subsequently. In addition, the operator may enter a particular prize cost he or she wants to be associated with a prize, and other appropriate fields in prize table 480 are automatically adjusted by the redemption system, as discussed below.

Specific prize win ratio fields 488 list the individual prize ratios of winning the 35 associated prizes as a specific prize or an "instant prize" during a game implemented by the game unit 10. In one embodiment, each ratio indicates that the particular specific prize will be won every n^{th} game played on the game unit in which a specific prize goal was met, where n is the number listed in the fields 488. For example, if a specific prize goal must be met to

win a specific prize, then the specific prize is awarded every n games in which the specific prize goal was met. The specific prize goal may be met by skill of the player during a game (e.g., hitting a specific target or getting a certain score), by random chance (e.g., a 10% chance each time a game is played to win), or by a mixture of skill and chance.

5 Higher valued prizes are won less often than lower valued prizes. For example, a small pizza will be won every 120 games played, while a video game console will be won every 4000 games. Since only one of the specific prizes should be awarded each time a specific prize goal is met, the system preferably examines each prize in turn, starting with the most valuable prize in the specific prize list 482. For example, whenever a game is played
10 on game unit 10, a game counter is incremented. When a player wins a specific prize after a specific prize goal is achieved in a game, the video console prize is first checked, i.e., the system checks whether the current game is the 4000th game (where the goal was met) since the video game console was last awarded to a player on this game unit 10 (or the 4000th game since console was awarded within the entire redemption system, i.e., among multiple
15 game units 10). If so, the console is awarded. If not, the next most valuable prize in the table (e.g., the T-Shirt) is similarly checked. This continues until a prize in the table is selected. If none of the prizes are selected, then no prize can be awarded, or a default prize can be awarded as the specific prize; for example, in the described embodiment, 10 prize credits (equivalent to the average number of prize credits given out in a game) are awarded as a
20 default prize. Alternatively, the ratios can indicate that a particular specific prize will be won every n^{th} game played, regardless of whether a specific prize goal was met in the games played.

25 Alternatively, the selection of a specific prize from the table 480 can be based on random and/or statistical determination. For example, the individual ratios 488 may indicate the chance of winning the particular listed prize when a specific prize goal is met (the goal can be met by skill, chance, etc.). The game unit can start with the most valuable prize in the list as above and determine if that prize is to be awarded by generating a random number; for example, if a random number between 1 and 4000 is "1", then the video game console has been won and no further prizes need be checked. If that prize has not been won, the next
30 most valuable prize on the list is randomly checked, and so on until no prizes are left in the table to check, at which point a default prize can be awarded, or no prize at all. Specific prize selection from a table of prizes is also described in Fig. 14. In one embodiment, the random determination of whether a particular prize is to be awarded is also modified by statistical information to create a "best fit" of prizes awarded according to the operator's
35 desired odds; this is done to offset the sometimes undesirable results that purely random (or pseudo-random) determination provides. For example, every 8000 games, 2 video consoles

are to be awarded. If it is randomly determined that a third video console is to be awarded within, e.g., the 3000th game, then a different prize can be awarded so that the desired odds are better met. For example, the next most valuable prize in the list can be awarded instead of the video console, as long as awarding the next prize would fit the desired odds for that 5 prize.

Similar to the prize cost fields 486, the specific prize ratios 488 are automatically determined by the redemption system based on other operator input such as actual cost 484 and the specific prize global win ratio 492, as discussed below. Also, the operator can enter a desired win ratio 488 for a particular prize, and other appropriate fields in the prize table 480 10 are automatically adjusted to take into account the entered ratio. These processes are discussed in greater detail below.

The prize credit global payout percentage 490 is a separate field of prize table 480 that allows an operator to view and to change a global payout percentage based on all of the 15 prizes in the prize list 482, their actual cost 484, and their purchase cost 486. The term payout, as used herein, is intended to refer to any transfer of monetary value given back to the player of the game apparatus or game system. Most commonly for redemption systems, payout is in the form of prizes, but it may also be cash, unredeemed tickets, prize credits, etc. The overall payout from a game during a time period should be subtracted from the total 20 revenue of the game during that time period to determine how much (net) profit the game made. Net profit can be further determined by subtracting any other costs accrued in providing the game from the gross profit, such as rental or purchase fees of the game unit, maintenance/repair costs of the game unit, and other costs.

The prize payout percentage 490 indicates the payout of the game unit 10 as a 25 percentage of an operator's revenue from the game that the operator will pay back, on average, to players in the form of prize credits or prizes purchased using prize credits. For example, the 20% listed in Figure 9a indicates that 20% of all base revenue from all of the games played on a particular game unit 10 will be paid back in the form of prize credits and prizes selected from prize credit winnings. In linked game embodiments, the percentage 490 can indicate that 20% of the revenue of all the games played on all of the linked game units 30 will be in the form of payout. In the preferred embodiment, this percentage number in field 490 is entered by the operator, and the redemption system will automatically adjust the prize cost 486 to achieve that value. The operator can also select the buttons 491 to adjust the value by 1% increments. Alternatively, the operator can adjust the prize purchase cost as described above, and the global payout percentage 490 will be appropriately adjusted by the 35 redemption system. This is discussed in greater detail below.

The specific prize global payout percentage 492 is a separate field of prize table 480, similar to field 490. Specific prize global field 492 allows an operator to view and to change a global payout percentage that is based on all of the prizes and prize ratios in fields 488. The payout percentage 492 indicates the percentage of an operator's revenue from the games
5 that the operator will pay back, on average, to players in the form of specific prizes based on the ratios in fields 488. In the preferred embodiment, this percentage number in field 492 is entered by the operator, and the redemption system will automatically adjust the ratios 488 to achieve the percentage value. The operator can also select the buttons 494 to adjust the value
10 by 1% increments. Alternatively, the operator can adjust the ratios as described above, and the global specific prize payout percentage 492 will be appropriately adjusted by the redemption system. This is discussed in greater detail below.

In the preferred embodiment, the operator is intended to enter desired payout percentages in fields 490 and 492. When these two percentages are added together, the resulting percentage shows what total percentage of revenue that the operator will be paying
15 back to players in total prize credits and prizes. The operator can thus enter desired payout percentages to fit within his or her operating expenses and desired profitability of the game units 10. Since the redemption system will automatically adjust prize costs and specific prize win ratios, the operator need not be concerned with calculating his or her own prize costs, as in previous redemption systems.

20 Referring back to Figure 9, after the prize table has been displayed in step 452, the process continues to step 454, where the process checks whether the operator has adjusted the prize name list 482 or actual cost fields 484. If so, then in step 456, the global payout percentages 490 and 492 and the fields 486 and 488 are adjusted according to the relationships described below based on any new actual cost values entered by the operator,
25 and the process continues to step 478, where the process checks if the operator desired to exit the prize table. If not, the process returns to step 454. If so, the process is complete at 476.

If no adjustments are made in step 454, the process continues to step 458, where it is checked whether the operator wishes to access the tournament setup table (the tournament setup table can also be accessed directly, without accessing prize table 480). If so, the process
30 receives input to any of the fields in the table in step 460 and modifies the tournament characteristics accordingly. This table is described with reference to Figure 9b. The process then continues to step 478.

If no tournament table is accessed, the process continues to step 462, in which the process checks if the operator has adjusted the prize global payout in field 490. The operator
35 can use a pointing device to point to the field and then use a keyboard, or select buttons 491.

If such an adjustment is made, the process continues to step 464, in which the prize cost 486 is adjusted, if necessary, to achieve the global payout entered by the operator.

The prize cost 486 is adjusted as follows. A prize cost is calculated separately for each prize listed in list 482. A prize actual cost, A, which is provided by the operator, is 5 divided by the global payout percentage entered by the operator, P, where

$$R = A / P \quad (1)$$

The resulting value R represents the amount of revenue required to achieve the desired payout percentage. For example, a candy bar costs the operator \$ 0.30. To achieve a 20% payout on each candy bar, the operator must take in $0.30 / 0.20 = \$ 1.50$ on the game unit for 10 each candy bar prize thus awarded.

Once the required revenue R is determined for a particular prize, then the average number of prize credits or tickets T that are known to be awarded per game is determined (average ticket payout). It is possible for the game's manufacturer to adjust game difficulty so that, on average, a predetermined number of prize credits will be awarded for each game 15 played. For example, games often have a payout about 8-12 tickets game, averaging to about 10 per game. The difficulty and thus the average prize credits awarded per game can be adjusted using a variety of techniques that depend on the type of game being played. For example, in an action game the speed of controlled objects, response of input devices, etc., can be adjusted so that most players don't receive a score higher than a particular value. In 20 card games, the frequencies of winning combinations of cards can be adjusted. In quiz games, the difficulty of the questions at various times during the game can be adjusted so that average players will typically win a certain number of prize credits per game. Durations of games which have a fixed duration can also be adjusted to achieve an average payout level of prize credits.

25 After the game unit 10 has been in use for some time, the average number of prize credits awarded per game, T, need not be estimated, but can be exactly determined and continually readjusted by monitoring each game played on the unit 10, recording the number of prize credits awarded for each game, and then averaging over all the played games to obtain a precise prize credit payout average. Previous game data can be stored in a storage 30 device local to the game unit 10 or on a separate medium or a remote apparatus such as server 108. Thus, if it were found that the average game on a game unit 10 were actually paying out 12 prize credits instead of the intially estimated 10 prize credits, the prize costs could be adjusted accordingly with the present calculation method. This provides the operator with current, accurate information about how much prizes should cost in prize

credits in order for the game unit to achieve a desired profitability. By having the redemption system of the present invention incorporated into game unit 10, this type of precise data gathering on actual ticket payout percentages is possible, thus allowing prize costs to be accurately adjusted.

5 Preferably, one average ticket payout level T is calculated for all games offered by game unit 10. Alternatively, each game offered by game unit 10 can have its own T value tracked by the redemption system. For example, an action game might only award an average of 8 prize credits per game, but a quiz game might award an average of 14 prize credits per game. A separate T value can be tracked and the prize costs can be adjusted in
10 view of the particular game that was played by the player, e.g., if a game awarding a large average number of prize credits were played, the prize costs might be slightly higher for prizes than for games having a low average number of prize credits awarded.

Once the average number of prize credits T awarded per game is known, this value can be converted to a value V using the cost per game C , where

15
$$V = T / C \quad (2)$$

For example, if the average number of prize credits awarded per game is $T = 10$, and each game costs the player \$ 0.25 ($C = 0.25$), then $10 / 0.25 = 40$ prize credits are awarded for each dollar inserted by the player into the game unit. V can be multiplied by the required revenue R to achieve the prize cost (PC) 486, such that

20
$$PC = R * V \quad (3)$$

In the example above, a required revenue R was determined to be \$ 1.50. Thus, the desired prize cost PC required to achieve the desired revenue R is $\$ 1.50 * 40 = 60 = PC$. Thus, a player must pay 60 prize credits from his or her credit account in order to receive a candy bar prize. Other prize cost results for other prizes using these example numbers and known
25 actual costs are shown in Figure 9a.

Combining the above relationships (1), (2) and (3) yields a succinct equation:

$$PC = (A * T) / (C * P) \quad (4)$$

Once the prize costs 486 have been adjusted in step 464, the process continues to step
478.

30 In step 466, the process checks whether the operator has adjusted the specific prize global payout percentage 492. If not, the process continues to step 462. If so, step 468 is

implemented. In step 468, the individual specific prize win ratios 488 are adjusted to achieve the desired global percentage 492 input by the operator.

The individual ratios 488 are adjusted as follows. A formula can be used to determine the individual ratios, as shown:

$$5 \quad B = M * A \quad (5)$$

where the B is the number that follows the "1 in" in the individual ratios 488 (e.g., "1 in 18", $B = 18$), M is a multiplier, and A is the actual cost of the particular prize as shown in fields 484. The multiplier M can be determined by another relationship:

$$M \equiv (N * H) / (P * C) \quad \cdot \quad (6)$$

10 where N is the number of specific prizes in the list 482, P is the global payout percentage entered in field 492, C is the cost per game on the game unit, and H is the hit ratio for specific prize goals on the game unit. The "hit ratio" is the fraction of games played, on average, in which a specific prize goal is met and thus a specific prize is won. The hit ratio can be an average chance that an independent skilled task will be completed by the player
15 and a specific prize won; alternatively, if no skilled task need be completed to win a specific prize, then the hit ratio can be the random or statistical chance that a specific prize is awarded during a game. Initially, the hit ratio is determined by the game developer, since the game developer can adjust the difficulty of the specific prize goal so that a "hit" occurs after a predetermined average number of games similarly to adjusting average awarded prize credits.

20 An estimated hit ratio as determined, for example, by the game developer is initially used in the above calculation of equation (6). In embodiments having skilled specific prize goals, once the game unit 10 has been played one or more times by actual players (e.g., after 100 times); the system can automatically adjust the hit ratio to the actual win frequency determined from the players' use of the game unit 10 by, for example, storing the number of games played and the number of times the specific prize goal was hit. This is similar to the determination of average awarded prize credits T in step 456 above. For example, if it is determined that the specific prize goal was hit 11 times over 100 games, then the hit ratio is more accurately provided as 11% rather than the 10% initially estimated. This actual hit ratio would then be used in the calculation of equation (6).

30 As an example, the operator enters a specific prize global payout percentage P of 10%. The number of specific prizes N in table 480 is 10, the cost per game is \$ 0.25, and the hit ratio is 10%. The multiplier M of equation (6) is thus determined as $(10 * 0.1) / (0.1 * 0.25) = 40$. Thus, for a small pizza having an actual cost of \$3.00, $B = 40 * 3.00 = 120$.

Thus, the individual ratio 488 for the small pizza would be 1 in 120. A ratio for a larger prize such as the video game console (A = \$100) would be 1 in $(40 * 100) = 1$ in 4000.

5 In the preferred embodiment, each offered game is normalized to the desired specific prize ratios based on the frequency of players achieving the specific prize goal. The
 10 redemption system may perform the normalization by applying separate hit ratios for each game offered on game unit 10. For example, some games may have much different hit ratios than other games depending on the nature of the game action, randomness, etc. and the difficulty of the specific prize goal. The hit ratio for a specific prize should thus reflect the difficulty in achieving a specific prize goal for a particular game. In a game unit system, all
 15 the types of games offered by all linked game units in the system can have a unique hit ratio used for determining an individual ratio 488.

A "base" hit ratio can be determined for one of the games offered on game unit 10. The ratios stored in fields 488 of the prize table 480 can be determined based on this base hit ratio. In addition, in the described embodiment, a "normalization factor" can be stored and
 15 used for each game offered by the game unit 10 (or for each game within the redemption system or offered all linked game units). The normalization factor indicates how much an individual ratio 488 should be adjusted based on the particular game played. For example, see Table 1.

	<u>GAME</u>	<u>NORMALIZATION FACTOR</u>	
	Scud Attack		1
	Solitaire		2
25	Quiz	0.5	
	Fun 21	0.33	

TABLE 1

30 When a specific prize goal is met by a player and the system determines the specific
 35 prize (e.g., step 338 of Figure 6), the game unit 10 (or server) multiplies the ratios 488 in the prize table by the normalization factor for the game played. Thus, if the played game has a hit ratio equal to one-half the base hit ratio (i.e., normalization factor = 0.5), such as the "Quiz" game in Table 1, then the ratios 488 are multiplied by 0.5 before the specific prize is determined. However, when a game having a hit ratio equal to the base hit ratio is played, the ratios 488 need not be adjusted.

The base hit ratio and normalization factors can be estimated initially. After a number of games have been played on a game unit 10, the normalization factor for each game can be based on the actual hit ratio determined for each game. The redemption system separately keeps track of actual hit ratios for each game offered on game unit 10 by recording 5 the number of games (for each type of game) and the amount of specific prize goals met.

In some embodiments, specific prize ratios 488 are only displayed to an operator in prize table 480. In other embodiments, the ratios 488 can be shown to players so that they can determine the odds of winning available prizes. After determining individual ratios 488, the process continues to step 478.

10 In step 470, the process checks if the operator has adjusted the prize cost field 486 of any of the listed prizes. Operators having more advanced knowledge of offered prizes and desired prize costs are thus able to affect the profitability of the game apparatus to a fine degree. An operator may want to reduce an individual prize cost to cause that prize to be selected more often by players, thus serving to promote/advertise a prize or brand name, or 15 reduce excess inventory of that prize. Similarly, an operator may want to increase a prize cost to cause that prize to be selected less frequently by players than other prizes. If no adjustment to prize costs is made, the process continues to step 474. If adjustment is made, then in step 472, the global payout 490 of the prizes is adjusted in accordance with the operator-changed prize costs. In performing this step, the same mathematical relationships 20 can be used as described above for step 464, except that the global payout percentage P is solved for. For purposes of this step, each prize in the table can be considered to have its own payout percentage. Thus, payout percentage P is calculated for those prizes that the operator changed the prize cost, and the unchanged prizes are assumed to have the old payout percentage. An average global payout percentage can then be obtained by adding all the 25 individual payout percentages and dividing by the number of prizes. This average payout percentage would then be displayed in field 490 of the prize table. The process then continues to step 478.

For example, in table 480 of Figure 9a, the operator changes Video Game Consol 30 prize to cost 10,000 prize credits instead of 20,000. An individual payout percentage for the video game console is calculated, using the relationships of step 464, to be $P = 40\%$. The unchanged prizes each have a payout $P = 20\%$, so that the averaged payout percentage would be $(9*20\% + 40\%) / 10 = 22\%$, which would be displayed in field 490 as the global payout 35 percentage. This averaged payout percentage determined after an operator has changed prize costs is not as accurate as the prize cost-payout percentage relation obtained in step 464, especially if players choose the prize having the changed cost more or less often than other prizes. However, the averaged percentage provides the operator with an estimate of payout

that is accurate enough for most purposes.

In step 474, the process checks if the operator has adjusted the individual specific prize ratios 488. Similarly to the prize costs of step 472, the operator may change individual specific prize win ratios to exert a greater degree of control over a game's or a prize's payout and profitability. If such a change is made, then in step 476, the process adjusts the specific prize global payout percentage 492 accordingly.

In the described embodiment, the specific prize global payout is adjusted as follows. The relationships of step 468 can be arranged to solve for an individual payout P when the ratio B is changed for a particular prize. When P is solved in such a fashion, the number of prizes N is equal to 1 in Equation (6) since an "individual" payout is being calculated only for the changed prize. Once the individual payout P is known for the changed prize, it is summed with the individual payouts for the other prizes in table 480 to achieve the global win payout percentage 492. For example, using the table 480 of Figure 9a, if the operator changes the individual win ratio of the T-Shirt from 1 in 160 to 1 in 100, then the individual payout P for the T-Shirt would be $(N*H*A) / (B*C) = (1 * 0.1 * 4.00) / (100 * 0.25) = 0.016 = 1.6\%$. Each of the unchanged prizes in the table 480 has an individual payout of $P = 1\%$ (which can be determined by dividing the global percentage 492 by the number of prizes N , or by using the relationships of step 468). Thus, the new specific prize global payout percentage is equal to $9 * 1\% + 1.6\% = 10.6\%$, which is displayed in field 492. The process then continues to step 478.

If no operator adjustment is made to the ratios 488, or after step 476, the process continues to step 478, where it is checked if the prize table is exited. If not, the process returns to step 454, and if so, the process is complete at 480.

It should be noted that, in the foregoing explanation, the process has been described as if the checking steps 454, 458, 462, 466, 470, 474, and 478 are serially executed. However, as will be appreciated by those skilled in the art, in practice such a serial checking method is not specifically required. Rather, in practice, the various described checking steps can be simultaneously checking for the described conditions, and functions (e.g., steps 456, 460, 464, 468, 472, and 476) can be call routines which are executed when called.

In the described embodiment, the prizes in list 482 are eligible to be awarded both as credit prizes and as specific prizes during or after a game played on the game unit 10. In the preferred embodiment, the operator may also choose particular prizes to be unavailable as credit prize and/or to be unavailable as a specific prize. In the described embodiment, the operator inputs a flag, such as "0", "NA", or other symbol, in the fields associated with those

prizes which the operator wishes to make unavailable. For example, if the operator does not wish to allow players to buy a T-Shirt prize with prize credits on the prize selection screen of Fig. 6b, the operator can put an "NA" (Not Available) symbol or characters in the field 486 corresponding to the T-Shirt. Similarly, if the operator does not wish the T-shirt to be 5 available as a specific prize during any game, then the operator enters "NA" in the field 488 corresponding to that prize. Alternatively, separate lists 482 of prizes can be provided for credit prizes and for specific prizes.

In an alternative embodiment, prize table 480 can receive input from servers or other 10 computers, operators, or prize distributors (such as a "national prize center") at remote sites or nodes over a network or other communication device instead of a single operator. This received information can include the prize list 482, actual cost 484, and/or any other information in prize table 480. For example, the list of prizes 482 can be sent periodically as a "prize catalog" from a prize distributor or supplier which offers an up-to-date listing of all 15 available prizes and thus reflects the current prize inventory of the prize distributor. After receiving the list of prizes, the operator could then enter the desired global payout percentages 490 and 492; or, this payout information can be received from a central location as well, such as a franchise headquarters. Information in prize table 480 can be stored 20 locally, or by the central location and be downloaded when needed. After the player selects a prize from the prize selection menu, the selection information can be sent to the prize distributor over the network, and the player can be mailed his or her selected prize from the prize supplier. This may be more convenient for operators, especially when large prizes such 25 as bicycles are won by players. If the prize is mailed, the prize supplier would typically require an address of the player where the selected prize can be sent to. The player can manually enter the requested address information in game unit 10 using an input device, or the address information might automatically be entered when the player provided monetary input to game apparatus 50 through the use of a credit or debit card or similar electronic identification. Alternatively, the prize can be mailed to the gaming environment, where the player can pick up the prize from the operator.

Such a system of receiving the list of prizes and other information from a remote 30 source also is suitable for redemption systems having multiple linked games, such as the embodiments of Figures 3 and 4. The same prize list can be provided to all games in the redemption system from a central prize database stored on a server or other storage device, thus providing uniformity of the types of prizes offered to games in a gaming environment or over a larger region.

35 In alternate embodiments, each type of game offered on game unit 10 can be associated with its own distinct prize table 480, having its own desired level of payout and

profitability, its own list of available prizes, etc.

The ability of the operator to change the prizes available to be won on a game apparatus in the present invention provide the operator with a great deal of flexibility in offering and coordinating a redemption system, which can be tailored to a specific type of location. For example, an operator can provide a different set of available prizes for each different type of offered game or game apparatus in one location or at different locations. Thus, a player of a card type game oriented for adults might be able to select from prizes including a deck of cards, cash, an alcoholic drink, or other related prizes, while a player of a game oriented for children might be able to select from prizes including toys, candy, or stuffed animals. Furthermore, the operator can designate particular game apparatuses in a gaming environment as "special" games that offer a specialized prize list having prizes of greater value, more selection, etc. that are different from other prizes available from other games at the gaming environment. This type of wide-ranging and differing prize availability on different games and game units in a single game environment would be far too time-consuming and complex to implement using traditional redemption systems.

FIGURE 9b is a diagram showing a tournament setup table 490 for entering tournament characteristics by the operator, prize distributor, or other source. Table 490 includes a column 492 of the available games on the game unit 10 or in the redemption system. For each of these games, there are several characteristics listed fields in table 490 which are receptive to operator input and adjustment. Tournament On/Off field 494 allows the operator to provide a tournament option for designated games, and to turn "off" the tournament for specified games when desired. Some games may not ever be suitable or desired for tournament play, and can have a "not available" selection. Games required field 496 indicates the number of non-tournament game credits which the player is required to insert before being eligible for a tournament for that game. For example, after three game credits are inserted, the player has the option to participate in a "Scud Attack" tournament (if offered). The operator can provide a zero value in field 496, if desired to allow players to participate in tournaments at will. Cost per game field 498 indicates the number of coins (or cents, dollars, game credits, etc.) that each game normally costs to play.

Percentage field 500 indicates the percentage of income from the player to the game unit 10 will be used as a contribution to the tournament prize. In effect, this is a "payout" percentage similar to the percentages 490 and 492 of prize table 480 showing how much of the revenue of a tournament is paid back to players, and thus allows and operator to designate a desired level of payout and profitability of the tournaments (the seed money in field 502 should also be added to the payout value to determine total payout). In the described embodiment, this percentage is the amount of cash that is contributed to the tournament

prize, where the tournament prize is cash. In other embodiments, the tournament prize can be prize credits, specific prizes, or other prizes having a value, where the value of the tournament prize depends on percentage value 500.

5 Seed money field 502 provides the operator with a starting value of the tournament prize and may be adjusted as desired. Thus, if only a few players participate in a tournament and thus few contributions are made to the tournament prize, there will still be some incentive to win since the player can win the seed tournament prize. Place percentage fields 10 504 allow the operator to designate how the value of the tournament prize is to be divided up among the top players in the tournament. The operator can designate the percentage of the prize going to the first place winner, second place winner, etc. Additional place winners past 5th place can also be designated, if desired.

15 Start date field 506, start time field 508, end date field 510, and end time field 512 indicate when the designated tournaments will be held. The operator can designate particular time periods for tournaments; when the end date and time have expired, no further players 20 can participate in the tournament and the tournament prize is divided up among the top players. In other embodiments, additional description fields can be provided to allow the operator to designate holiday periods, sports seasons, a certain time period of every day, month, or year, or other periods that cannot be conveniently specified in a single time range. Repeat tournament field 514 allows the operator to select whether a particular game's tournament will be automatically repeated once the previous tournament has ended. Alternate fields might also be provided to designate further conditions concerning when or how tournaments will repeat.

25 Of course, additional fields can be provided in tournament table 490 to allow the operator to designate further characteristics of tournaments, such as additional conditions to cause a tournament to conclude (as discussed above in Fig. 7), participation based on predefined characteristics (age, member of a group or club, "preferred customer" status, whether they have achieved a "tournament goal" in a game, etc.), providing various skill levels or handicaps, and providing special tournaments with different prizes and conditions. 30 As for the prize table 480, some or all of the fields can be manually input by the operator, or remotely input by operators, a linked server, or other source.

The tournament table 490 allows the operator further control in determining available prizes, options, and profitability of the redemption system of the present invention. Furthermore, the ease of use of the tournament table 490 allows the operator to spend a minimal amount of time defining desired tournament characteristics and profitability.

FIGURE 10 is a perspective view of another example of a game apparatus 500 that can be used as game unit 10 in the present invention. Game apparatus 500 described herein to specifically illustrate a game embodiment that awards specific prizes in accordance with the present invention. Game apparatus 500 is a video game embodiment that is suitable for 5 use in game arcades and other locations that offer coin-operated arcade games and the like. Game 500 includes a front panel section 502, player controls 504, and a display screen 506. Preferably, opposing sides of video game apparatus 500 each includes its own front panel section 502, allowing two players to play the game simultaneously or in alternate fashion.

10 The front panel section includes a coin deposit slot 14 (or other monetary input device), a universal ticket dispenser 20, a specific prize ticket dispenser 22, and a speaker 508. These components are similar to those described with reference to Figure 1. Universal ticket dispenser 20 and specific prize ticket dispenser 22 (such as a printer 513) are provided behind front panel section 502. Universal tickets 510 and/or specific prize tickets 512 can be dispensed during or after a game process implemented by game apparatus 500.

15 Player controls 504 are provided to allow the player to input game commands during a game process. In the described embodiment, the controls 504 include a stop button 514, which is pressed by the player when the player wishes to halt a rotating pointer during a game (described below). Different or additional player controls can also be provided in alternate embodiments as described above. Start button 515 is preferably a button, trigger, 20 switch, or similar device which begins a game process on game apparatus 500 when pressed by the player.

25 Speaker(s) 508 emit sounds based on game actions and other game states and is controlled by the game processor 12. Sound processing chips and other components well-known to those skilled in the art can be used to provide necessary sounds before and after game play. Sounds can be provided before game play, for example, to advertise particular specific prizes that can be won on the particular game apparatus 500.

Display screen 506 provides visual feedback to the players of game apparatus 500. A cathode ray tube (CRT), liquid crystal display (LCD) screen, or other type of display screen can be used to display video images used during a game process. Display screen 506 can 30 also display the game score and progressive score, if applicable, so that separate score displays are not required. Display screen 506 also preferably provides "specific prize information" regarding the specific prizes that can be won when using the game apparatus 500. Alternatively, prize information for specific prizes that can be one in other areas of the gaming environment can be displayed. The display screen 506 and images provided during a 35 preferred game are described in greater detail with respect to Figure 11a. In alternate

embodiments, mechanical devices can be provided instead of display screen 506, such as a mechanical spinning wheel and pointer powered by motors.

The display screen 506 is coupled to game processor 12 which controls the images on the screen. The game processor 12 can be included in a standard computing apparatus that is positioned in the housing of game apparatus 500. For example, an IBM-compatible personal computer, a Macintosh® compatible computer, or other widely available computers can be provided within the housing 501 of game apparatus 500 to control game functions and display screen 506.

Sign 525 can be provided to advertise the game apparatus 500 to players in the 10 gaming environment. Alternatively, the sign 525 can also be used to display information related to specific prizes that can be won on game apparatus 500. Such specific prize information can also be provided on displays on other areas of game apparatus 500.

FIGURE 11a is a diagrammatic illustration of a specific example of display screen 506 and images 518 displayed during a game process on game apparatus 500 of Figure 10 to 15 illustrate the specific prize functionality of the present invention. Images 518 include a playing area or game space, which in the present embodiment includes a circular playing field 520. Playing field 520 can be circular, approximately circular, or a different shape in other embodiments. In addition, the playing field 520 can be implemented with mechanical components, such as a rotating wheel. Circular playing field 520 includes multiple segments 20 522, where each segment includes a point score 524 displayed as a number value or similar indicium. The lowest valued segments are preferably displayed at opposing sides of the playing field, while the highest valued segments are displayed 90 degrees offset from the lowest values. A "jackpot" segment 527 is a special segment that can provide a player with a progressive score and/or other award, as described below.

25 In the described embodiment, a pointer 526 rotates around playing field 520 in a particular direction (clockwise or counterclockwise). The location of the pointer is indicated by "highlighting" or otherwise marking the segment at which the pointer is currently positioned; the segment pointed to can be displayed as a different color or brightness. The pointer can move at a constant speed, or can be adjusted to move more slowly when pointing 30 to the lower valued segments (such as 0, 1, 2, etc.) and move at a faster speed when pointing to the higher valued segments 522. When a player presses stop button 500, the pointer 526 stops moving at the segment it was pointing to when the player pressed the button 514. The point score 524 of the pointed-to segment is then added to the game score.

Image 518 also includes game score displays 530a and 530b, where a game score

display is provided for each of two possible players of the game apparatus 500. The game scores are arranged on opposing sides of display screen 506 to allow easy viewing of the desired display by each player. In the described embodiment, game score display 530a and 530b display the number of universal tickets won by the player. This number of tickets is
5 displayed until the game is over and the tickets are dispensed from ticket dispenser 20. In alternate embodiments, the displays 530a and 530b can display a game score from which a number of tickets is determined and dispensed, e.g., one ticket can be dispensed for every 5 points of game score.

10 Progressive score displays 532a and 532b provide the player with information regarding the current progressive score or "jackpot" and operate similarly to game score displays 530a and 530b. The progressive score is incremented by a predetermined amount when a player inserts a coin in coin slot 14 (or can be incremented according to other criteria). Score displays 532a and 532b can show an individual progressive score that has been accumulated only from players of the game apparatus 500, or a collective progressive
15 score accumulated over multiple linked game apparatuses and the value of which can be received from a progressive bonus apparatus. Displays 532a and 532b show how many tickets will be won by a player if the player stops pointer 526 at one of the "jackpot" segments 527, i.e., the number displayed by progressive score displays 532a and 532b is added to the game score of displays 530a and 530b when the jackpot is scored. Thus, in the
20 example of Figure 11a, the player would win 192 tickets by stopping pointer 526 at the jackpot segment 527. Preferably, the player receives a predetermined number of "spins" for each coin inserted, so that the player has multiple opportunities to stop the rotating pointer 526 at a high score.

25 Other variations can be provided in game apparatus 500 using one or more rotating pointers. For example, multiple pointers can be used to add the respective numbers they point to or otherwise indicate a game result.

30 Game function message window 534 displays game-related messages to the player. Preferably, the message is in a text format that scrolls by in the window 534 in the direction of arrow 535, such that the entire message might not be seen at one time in the window.
35 Game related functions displayed in the window include messages to insert a coin, to retrieve a universal ticket or a specific prize ticket from the dispenser, instructions on how to play the game of game apparatus 500, how many "spins" the player receives per game and the number of spins already used; and other game information. The operator can preferably enter the messages that are displayed in window 534. For example, the operator can connect a keyboard to a computer/game processor 12 provided in game apparatus 500 and enter the information desired to be displayed.

Specific prize window 536 displays prize information and messages related to the specific prizes that can be won by a player of game apparatus 500. Like message window 534, window 536 preferably displays messages in as text words that scroll by in the window in the direction of arrow 537. The messages of window 536 can provide information 5 concerning the specific prizes available and how to win those prizes. These messages can be provided before a game process begins during an "attract mode" to inform a potential player what can be won on the game apparatus 500. If a player wins the specific prize, a message indicating that the prize has been won can be displayed during the game process similarly to the messages of Figure 11c, described below. The prize window 536 is shown as rectangular 10 window in Figure 11a; however, the window 536 can be widely varied in number, size, shape, and location in alternative embodiments. In other embodiments, a window need not be shown at all, and prize information and other messages can be displayed superimposed 15 over the images 518 on display screen 506.

The determination of whether a specific prize has been won can be implemented in 15 several ways. The example of Figure 11a shows a specific prize that can be won depending on the number of players who have played the game apparatus 500. The message, "100th player wins a free bear" indicates that if a player is the n^{th} player since the last specific prize was won on game apparatus 64 (where $n = 100$), the player automatically wins the described 20 prize (in this case, a stuffed bear). If, after a player inserts a coin in coin slot 14, the game processor 12 determines that the player is the 100th player since the last specific prize was won, then the processor signals specific prize ticket dispenser 22 to dispense a specific prize ticket at that time or after the game is over. In addition, this prize information about a particular offered specific prize can be provided as auditory feedback from speaker 508 in the 25 form of recorded or synthesized speech. An example of a specific prize ticket 512 suitable for game apparatus 500 is shown in Figure 12, below.

The operator of game apparatus 500 can determine how frequently prizes are won and 30 the value of the prizes. For example, the operator can designate that every 1000th player will win a prize, and provide a more valuable prize to the winning player. Every n^{th} player can win the specific prize; or, the number n can be determined randomly after each instant prize 35 is won and can be designated a range, such as 10-10,000. Or, specific prizes can be randomly determined for each game process once it is determined the player has won a prize. The operator can also provide a "prize table" having multiple specific prizes, one of which that can be won as a specific prize from game apparatus 500. A stuffed bear might be won by every 100th player, while a bicycle might be won by every 1000th player on the same game apparatus. This functionality is described in greater detail with respect to Figures 9a and 14.

Alternatively, the message in window 536 can describe a prize that is won depending on both the number of players that have previously played the game as well as a particular game result. For example, the message, "100th player to hit the jackpot wins a free bear" can be displayed. The first player to stop pointer 526 on the jackpot segment 527, and who was 5 also the 100th player to hit the jackpot, would win the specific prize. Since the prize would be more difficult to win, a more valuable prize can be offered if a player meets these conditions or goal. Specific prizes that are won depending on specific game goals or tasks are described in greater detail with respect to Figure 11c.

FIGURE 11b is an alternate embodiment of display screen 506 shown in Figure 11a. 10 Images 518' shown in display screen 506 include the same playing field 520, segments 522, game score displays 530a and 530b, progressive score displays 532a and 532b, and game function message window 534 as shown in Figure 11a.

In the embodiment of Figure 11b, special "prize" segments 544 are provided in playing field 520. When the pointer 526 is stopped by a player on a prize segment 544, the 15 player wins a specific prize. Message window 536 provides information to the player relating a specific prize to the prize segment 544. For example, as shown in Figure 11c, the message window 536 displays the message "'prize!' wins instant candy bar." This message indicates that if the player stops the pointer 526 at the prize segment 544, then game processor sends signals to dispenser 22 to print out a specific prize ticket 512 which the 20 player can use to redeem a candy bar. The message window 536 and/or the ticket 512 can also describe a particular brand name and/or manufacturer of candy bar or other prize, to be used as a promotional exercise or to provide companies with advertising opportunities.

FIGURE 11c is a diagrammatic illustration of the display screen 506 of Figure 11b in which a player has won a specific prize. The player has stopped pointer 526 at prize segment 25 544a by pressing stop button 514 at the proper time. A new prize window 548 preferably is then displayed near the prize segment 544a which indicates to the player that he or she has won a specific prize and the identity of the specific prize. The prize window 536a also preferably displays a message indicating the particular prize that the player has won and informing the player to exchange the dispensed ticket to redeem the prize. In those 30 embodiments where the player must additionally be a specific-numbered (e.g., 100th) player to win, the prize window can display that the player was the required numbered player.

Once the player has won a specific prize, the specific prize ticket dispenser dispenses a specific prize ticket 512 to the player, an example of which is shown in Figure 4. Alternatively, the screen 506 as shown in Figure 11c can be continuously displayed until the 35 operator sees the screen, verifies a specific prize has been won, and provides the prize to the

winning player.

A key feature of the specific prize message windows 536 and 548 and the specific prize ticket 512 of Figures 11a-11c is the flexibility of the prizes that can be displayed and offered and the promotion of the prizes. An operator of the game apparatus 500 or the

5 gaming environment can display virtually any prize-related information that is desired and can change the prize information under a wide variety of conditions and circumstances. For example, the operator can change the specific prize that is won when the player hits the "jackpot" segment 527 or prize segment 544. The value of the specific prize can be adjusted depending on the skill settings of the game apparatus. For example, if the pointer 526 is
10 adjusted by the operator to move at a higher speed, the value of the specific prize can be increased. The operator can also change the specific prize depending on a particular time of day, day of the week, day of the month, day of the year, holiday, grand opening, large public event, movie release, product release, etc. For instance, during a national basketball tournament which the operator is broadcasting in the gaming environment, the operator can
15 provide miniature basketballs as the specific prize. The operator would simply have to type in a new text message to scroll in window 86 (or 548) and provide appropriate text and/or pictorial information to be printed on the ticket 512 related to this prize. Customized or specialized messages can be provided in pre-programmed or real-time fashion when certain events occur. An example of a real-time prize message designation is a "happy birthday"
20 message that is displayed on a machine in prize window 536 that a specific targeted player is currently playing, along with a special prize that the player can win. Or, a gratuitous specific prize ticket can be dispensed for that targeted player due to the special occasion. The operator could provide commands from a remote controller linked to the game apparatus 500 to dispense a particular specific prize ticket for the player.

25 An embodiment with even greater automation allows the operator to specifically program in advance the specific prizes that are available and how the displayed prize information changes over periods of time. For example, the operator can store a file of data that includes prize information that is to be offered and displayed on game apparatus 500 for particular days of a two month period, for particular hours during a week or month, or during
30 some other specified time period with a specified resolution.

In an alternative embodiment, pictures of specific prizes can be displayed in prize windows 536 and 548 and associated text information can be also be displayed. Alternatively a separate screen of pictures of prizes can be displayed on display screen 506 when the game apparatus is not being played (i.e., in "attract mode"). A variety of offered prizes, and the chances and/or game goals necessary for winning the prizes, can be shown on the pictorial display screen. The operator can load digitized pictures into memory 30 or 32

for the game processor 12 to display on display screen 506 and to print on specific prize tickets 512.

5 Prize windows 536 and 548 can also be used to provide information about universal tickets 510 dispensed from dispenser 20. For example, prizes that are offered at an arcade and their associated "price" in numbers of universal tickets can be displayed as scrolling messages or as pictorial information in display screen 506. Or, a prize system as explained can be employed and displayed on screen 506.

10 The display of a specific prize that can be won provides players with additional incentive to play a game. A player that can view a particular prize description and what goal needs to be achieved on the game apparatus to win that prize has a more immediate sense of reward when approaching and/or playing a game. When the player merely has to insert a coin to have a chance to win a prize (as in the embodiment of Figure 11a), there is additional incentive to play a game. The display of prizes directly on the game apparatus communicates more directly and more effectively the prizes that are available to be won. In the standard 15 redemption games of the prior art, the player must inconveniently view a separate prize display area to determine which prizes are available. In addition, the customizability of the prizes and the display in message windows 536 and 548 provides players with novelty and an atmosphere of excitement and change.

20 A variety of other types of redemption games can be used to award a specific prize in accordance with the present invention. For example, mechanical redemption games can provide a specific prize feature and include a specific prize ticket dispenser 22 and prize information displays similar to prize windows 536 and 548. For example, an LED or LCD display can be used to provide scrolling text messages as is well known to those skilled in the art.

25 FIGURE 12 illustrates an example of a specific prize ticket 512 which can be dispensed by game apparatus 500 (or by other game apparatus embodiments disclosed herein). Ticket 512 includes a written description 538 of a particular specific prize that has been won, as well as instructions on how and where to exchange the ticket 512 for the prize. A pictorial representation 540 can also be included to provide the player with an accurate 30 portrayal of the specific prize won. The text 538 can be changed to describe any particular prize that can be won by the player. Since specific prize ticket dispenser 22 is preferably a printer 63 (Fig. 10) or similar output device, game processor 12 can send the appropriate data to dispenser 22 to print the appropriate text and/or pictorial indicia for a particular prize. For example, each prize can have associated prize ticket data stored in memory such as RAM 30 35 or ROM 32 which is retrieved when that particular prize is won. The associated data is then

sent in bitmap form or other form to be printed on ticket 512 and dispensed to the player.

FIGURE 13 is a flow diagram describing another method 600 of implementing game unit 10, 50, or 500 of the present invention in which specific prizes and progressive scores can be provided to the player. This process can be implemented by game processor 12, or by a processor linked to the game apparatus 10, 50, or 500. The process begins at 602, and, in a step 604, the process 12 checks if a coin or other monetary input (token, credit card, etc.) has been input by the player and the game apparatus has been enabled to begin playing the game. This input can be checked by determining if currency or a token(s) has been inserted in coin slot/box 14 and/or start button 16 selected. If monetary input has not been provided, or if the player is not authorized in some other way to play a game, then the process loops until monetary input has been detected.

In step 606, the process determines whether a specific prize has been won by the player, and a specific prize ticket for that prize is dispensed if the player has won a prize. This step is only implemented in those embodiments where a player can win a specific prize simply by providing monetary input and beginning a game, as described with reference to Figure 11a. Several methods can be employed to determine if the player has won a specific prize. In one method, the game processor 12 can check if the player is a certain numbered player since the last player won the specific prize. For example, if every n^{th} player wins a prize, and the current player is the n^{th} player since the last prize won, that player automatically wins a prize. Or, n can be determined randomly after each specific prize is awarded. Other methods are described in Figure 9a.

Once it is determined that the player has won a specific prize, the process then determines which prize the player has won. This can be accomplished in several ways. In the embodiment of Figure 11a, this is simply the prize that is advertised in prize window 536. Alternatively, the prize can be selected from multiple different possible prizes. The prize can be selected from an ordered list, so that the next prize in the order has been won by the player. Or, the prize can be randomly determined from the list or determined from a prize table, as described with reference to Figures 9a and 14.

In the preferred prize table embodiment, the process determines whether a player has won a specific prize and the identity of the specific prize that is won at the same time. This embodiment is described in greater detail with respect to Figure 9a and 14. If the process determines the player has won, a specific prize voucher, such as a ticket, is preferably dispensed to the player from dispenser 22 (or other linked dispenser). Alternatively, this specific prize ticket can be dispensed in step 632 (if applicable) after the player completes a game. In alternative embodiments, there is no specific prize dispenser 22 included in the

game unit 10, and the player is informed of the prize won on a display screen or other output device. The operator or prize supplier can be informed of the won prize by other means such as a networked computer that is linked to the winning game apparatus, or by a player simply going and informing the operator of the won prize.

5 In next step 608, the game process begins after the player pushes a start button or equivalent control. Several different possible game actions can be provided at this step. For example, in game apparatus 500, pointer 526 rotates around playing field 520. In other games, a player will be able to control objects or items and have a potential to score points in the game or achieve a predetermined task or goal, as described in other embodiments herein.

10 Some networked games may not start until some or all players participating in the game have pressed a start button or provided some other command.

15 In step 610, the process checks if a player has input any game commands. If not, step 614 is performed, described below. If game commands are input, the game command is processed in step 612, and any game states can be updated and changed, if applicable. For example, a player may press a button during the game process that provides an appropriate game command to game processor 12. The game processor then processes that game command and determines whether to send signals to control output devices 20 and/or a display screen. In the embodiment of Figures 11a-c, the player may press stop button 514, and the game processor appropriately stops the rotation of pointer 526. Other game commands corresponding to other manipulations of game controls by the player are input to game processor when appropriate and cause the game processor to control output devices as appropriate.

20 After step 612, or if the player has not input a game command in step 610, then step 614 is performed, in which the process checks if a predetermined goal or task has been achieved by one or more players playing the game. A goal can be to score a certain number of points in a game, complete a mission or explore a virtual environment in a video game, stop pointer 526 on a jackpot segment 527 or a prize segment 544, guide a playing piece into an aperture, or any other game result that can cause a game score to increase or to win a specific prize. If a goal is not achieved, the process continues to step 620 as described below.

25 30 If a predetermined goal(s) or task(s) is achieved, the process continues to step 616, where the process checks if there is a specific prize associated with the achieved goal or task. For example, in the game apparatus 500 of Figure 11c, the player wins a specific prize if the pointer is stopped on a prize segment 544, i.e., the goal of stopping the pointer at this segment is directly associated with receiving a specific prize. In other embodiments, other goals or tasks can be directly associated with winning a specific prize, such as guiding a ball

into a specific aperture, shooting or hitting a specific target in the game, achieving a particular card hand in Poker, etc. If there is no specific prize associated with the achieved goal, then the process continues to step 620. If there is a specific prize associated with the achieved goal, then the process determines the specific prize that has actually been won in step 618 and dispenses a specific prize ticket for the associated prize in step 628. The determination of the actual prize won by the player can be performed similarly to step 606, described above; for example, the associated prize can be already known and previously displayed, or an ordered or random prize can be selected from a plurality of possible specific prizes (e.g., selected from a prize table as described with respect to Figures 9a and 14).

5 Preferably, the dispensed specific prize ticket includes text and/or pictorial indicia portraying the awarded specific prize and how it may be exchanged to receive the specific prize. Alternatively, as in step 606, no specific prize ticket is dispensed, and the operator or prize supplier is informed that the player has won a specific prize in some other fashion. Or, the dispensing of the specific prize ticket can be delayed until step 632, below. The process then

10 continues to step 620.

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In step 620, the process checks if the game is over. The criteria for determining if a game is over can vary widely depending on the embodiment. For example, some games are over when a time limit expires; in others, the player uses or plays a predetermined number of playing pieces or is stopped by game obstacles a predetermined number of times before the game is over, or the achievement of a particular goal or task may cause the game to end. If the game is not over, the game process is continued in step 622, i.e., the game states continue towards the ultimate completion of the game. For example, sounds may be played from a speaker, images may be displayed on display screen 56 or 506 of the game apparatus, or a ball may continue to roll down a ramp. The process then returns to step 610 to determine if the player has input any game commands.

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If the game is over in step 620, the process continues to step 624 in which the game score may be calculated/updated, for example, by adding any necessary points to the game score that have not already been added during step 612. By examining the score, a player's skilled performance of the game can be ascertained. The process then continues to step 626.

30 Step 626 checks whether a progressive goal has been achieved, if applicable. Progressive goals, if achieved, allow the player to win a progressive score or bonus award that has been accumulated over previous uses of the game apparatus and/or any other linked game apparatuses. For example, in the embodiment of Figure 11a, 11b, and 11c, when the player stops pointer 526 at the jackpot segment 527, the player has achieved a progressive goal. Progressive goals may be achieved, for example, by a skilled performance of the player in the game process. In addition, different goals can be designated for an individual

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progressive bonus award contributed by a single game apparatus and for a collective progressive bonus award contributed by multiple linked game apparatuses.

If no progressive goals were achieved during the game, or if no progressive features are included in the implemented embodiment, then the process continues to step 630, 5 described below. If one or more progressive goals were achieved, the process continues to step 628, in which the accumulated progressive score is added to the game score. For example, in the embodiment of Figures 11a- 11c, the progressive score in display 532a or 532b is added to the ticket amount in display 530a or 530b. When using a separate progressive bonus apparatus, the game processor 12 can send a signal to the progressive 10 bonus apparatus which indicates that the progressive goal has been achieved and includes the identity of the winning individual game apparatus 10. The progressive score would then be received by the winning game apparatus from the progressive bonus apparatus and added to the game score of the individual game apparatus 10. Alternatively, steps 626 and 628 can be implemented during the game process of steps 610-622 before the game is over in step 620.

15 In next step 630, a specific prize is determined for any applicable goals achieved by the player and which were not earlier associated with a specific prize. For example, in some embodiments, a specific prize is not determined in step 606 or in step 618, but may instead (or additionally) be based on any progressive goals achieved by the player. For example, if the player stops the pointer at the jackpot segment 527 in the embodiment of Figure 11a, the 20 player might also win a specific prize in addition to the progressive jackpot. In other embodiments, the specific prize may be determined based on a final score of the player, including any progressive score. The specific prize is determined as described above in steps 606 and 618, and a specific prize ticket is dispensed, if appropriate.

25 In step 632, universal tickets based on the game score (as modified by step 628) are dispensed to the player from universal ticket dispenser 20 (if such tickets are implemented), or are credited to the player as prize credits as explained above. For example, one prize credit can be awarded for each point of game score. Alternatively, one prize credit can be awarded for every X scored points; for example, X = 10. Alternatively, an operator of the game apparatus can manually provide universal tickets or a prize to the winning player based 30 upon the game score. In addition, any specific prize tickets won by the player can be dispensed in this step if applicable. The game process is then complete as indicated at 634. The process can also return to step 604 to wait for another coin to be inserted in coin slot 14.

35 FIGURE 14 is a flow diagram illustrating an example method 650 of using a "prize table" for determining whether a player has won a specific prize and/or determining the identity of the specific prize that the player has won. This method can be used in any or all

of steps 606, 618, or 630 of Figure 13, or at any other time during a game process. Alternatively, the method described with reference to Fig. 9a can be used.

5 The specific prize that can be won by the player is preferably selected from multiple different possible prizes. These possible prizes can be listed in a list of prizes or a "prize table" as referred to herein. An examples of a prize table is shown above in Figure 9a. More simplified prize tables are shown below as Table 1 and Table 2. Table 1 is more appropriate for a redemption arcade game environment:

	<u>PRIZE</u>	<u>FREQUENCY</u>	<u>VALUE (each)</u>
10	Candy Bar	1 in 25	\$ 0.40
	Small Stuffed Animal	1 in 300	\$ 3.00
	Large Stuffed Animal	1 in 1,000	\$12.00
	Cassette player	1 in 4,000	\$50.00
15	Bicycle	1 in 10,000	\$100.00

TABLE 1

A different sample prize table is shown in Table 2, which is more appropriate for a bar or restaurant-type environment:

	<u>PRIZE</u>	<u>FREQUENCY</u>	<u>VALUE (each)</u>
20	Soda	1 in 10	\$ 20.00
	Pitcher of Beer	1 in 100	\$ 10.00
	Pizza	1 in 300	\$ 20.00
25	Dinner for two	1 in 2,000	\$ 25.00

TABLE 2

30 Each entry in the prize table can preferably be modified as desired by the operator or prize supplier for game unit 10. For example, any text description entered under the "Prize" field in the table preferably is displayed in prize window 536 of the embodiment of Figure 11a by methods well known to those skilled in the art. The other fields can also be modified, as described below. In addition, other fields can be provided in the table as needed or desired. Prize tables such as these are referred to in method 650 as described below.

35 The method begins at 652. In step 654, the process examines the highest prize entry in a stored prize table. The "highest" entry is preferably the prize having the greatest value, as shown in the "Value" field, and having the lowest frequency of being awarded, as shown in the "Frequency" field. For example, the highest prize is the bicycle in Table 1 and "dinner for two" in Table 2. In alternate embodiments, other criteria for determining the highest

entry can be used; for example, the highest entry can simply be the first prize provided in the list. The operator can store the prizes in any desired order, and need not order them according to value. Also, in other embodiments, multiple prize tables can be provided, for example, in storage or memory, and each of which can be specific to a particular event, time period, or other circumstance. In such an embodiment, the process would select the most appropriate prize table in step 654 based on predetermined criteria.

In next step 656, the process checks if the examined specific prize has been won by the player. This can be accomplished in a variety of ways. For example, the game processor can generate a random number and check if that random number falls within the frequency of 10 winning as specified in the prize table. Thus, if the bicycle prize were the currently-examined prize, the game processor can generate a random number between 1 and 10,000; if the resulting random number is a predetermined value, such as "1", the player has won the prize; if the random number is any other value, that prize has not been won. Other methods of determining if the specific prize has been won are described above in detail with respect to 15 Figure 9a.

If the prize is determined to have been won, step 658 is performed, in which a specific prize ticket for that prize is dispensed. This ticket is preferably customized to the selected prize as explained in the embodiments above. In addition, the identity of the prize won can be displayed to the player on an output device such as a display screen 56 or 506. 20 Alternatively, no specific prize ticket need be dispensed and an operator or prize supplier can verify and award the prize in some other fashion. The process then is complete at 666.

If the prize is determined not to have been won in step 656, then, in step 660, the process checks if there are more prizes in the prize table to check. Since the prizes are preferably stored in a predetermined order in the prize table, the process can readily 25 determine if there is a next prize in the order. If so, in step 662, the next prize is examined. For example, if the bicycle of Table 1 was determined not to have been won in step 656, the next prize of the cassette player is examined. The process then returns to step 656 to determine if the currently-examined prize has been won. If there are no more prizes in the prize table to check at step 660, then none of the prizes have been won by the player, as 30 shown in step 194. Alternatively, there can be a "lowest" or "default" prize in the table which is always won by the player if none of the more valuable prizes have been won. The process is then complete at 666.

Using the above-described process, each prize in the prize table is randomly checked 35 to determine if the player has won that prize, starting with the most valuable prize. The operator can thus make a fairly accurate estimate of how much the prizes will cost over long

term play. By adjusting number, frequency and value of the prizes in the table, the operator can design a scheme to provide desired revenue and prize costs. For example, since the operator designates the frequency of win of the bicycle in Table 1 to be 1 in 10,000, and designates the value of the prize (\$100.00), the operator knows that over 1,000 plays of the 5 game apparatus, that prize will cost the operator, on average, about \$10.00.

Other methods of specific prize determination can also be used. For example, instead of generating a separate random number for each prize in the table, the game processor might generate a single random number and use that number to determine if any of the prizes in the table have been won. If that random number indicates that multiple prizes have been won, 10 the most valuable of those prizes is selected as the specific prize. Alternatively, other criteria may determine that the player has won a specific prize (as described above), and the next prize in the list can be selected as the prize the player has won. Also, a randomized order of prizes in the table can be provided.

In addition, the determination of the prize, whether randomly or by some 15 predetermined order, can be accomplished before a game process begins and the determined prize displayed to the player. In this way, the player knows the particular prize he or she is playing the game to win before inserting a coin and beginning play.

While this invention has been described in terms of several embodiments, it is contemplated that alterations, permutations, and equivalents thereof will become apparent to 20 those skilled in the art upon a reading of the specification and study of the drawings. For example, many types of games can be provided for use with the disclosed redemption system. The redemption system can be implemented on a single game unit or among multiple connected game units, with or without use of a server. Various goals can be attempted by players in a game to win prize credits, specific prizes, or tournament prizes. 25 The provision of prizes to players can be achieved in many ways, including specific prize tickets or coupons, sending a prize to a player, or electronically indicating to an operator the prizes won and/or selected by a player. It is therefore intended that the following claims include all such alterations, permutations, and equivalents as fall within the spirit and scope of the present invention.

CLAIMS

1. A method for providing a redemption system for players of a game apparatus, said
5 method comprising:

providing a game on said game apparatus for a player to play;

providing a number of prize credits for said player based on an outcome of said game;

providing a prize selection menu for said player, said prize selection menu displaying
at least one prize selectable by said player; and

10 receiving an indication of a selection of a prize by said player, said indication
resulting from input by player using an input device of said game apparatus, wherein said
selected prize is provided to said player after said indication is received.

2. A method as recited in claim 1 wherein said player plays said game in exchange
for monetary input from said player to said game.

15 3. A method as recited in claim 2 wherein said outcome of said game is influenced
by skill of said player.

4. A method as recited in claim 2 wherein said prize selection menu is displayed on a
display screen of said game apparatus.

20 5. A method as recited in claim 2 further comprising a step of dispensing a specific
prize ticket describing said selected prize and which is redeemable for said prize.

6. A method as recited in claim 2 wherein said prize selection menu includes a prize
cost for each of said prizes provided in said prize selection menu, and wherein prize credits
equal to said prize cost are subtracted from said player's prize credits after said player has
selected said prize.

25 7. A method as recited in claim 6 wherein said providing a game includes providing
an option to said player of playing a single game for prize credits based on a game score and
providing an option to said player of playing a tournament game for a tournament prize
contributed to by multiple players of said game apparatus.

30 8. A method as recited in claim 6 wherein said providing a game includes providing
a specific prize goal during said game that may be achieved by skill of said player, and

wherein if said specific prize goal is achieved, said player receives a specific prize.

9. A method as recited in claim 8 wherein said specific prize is determined using a prize table listing specific prizes that can be won by a player when said specific prize goal is achieved.

5 10. A method as recited in claim 6 wherein said game apparatus is included in a system comprising a plurality of game apparatuses coupled together such that players of said plurality of game apparatuses may all choose prizes from a single prize database communicated to said plurality of game apparatuses.

10 11. A method as recited in claim 10 wherein said plurality of game apparatuses communicate with a server which includes said prize database.

12. A method as recited in claim 6 further comprising a step of checking whether a progressive goal was achieved by said player using skill in said game, such that if said progressive goal is achieved, progressive bonus prize credits are awarded to said player, said progressive bonus credits being contributed to by multiple players of said game apparatus.

15 13. A method as recited in claim 2 wherein said selected prize is provided to said player by sending an indication of said selected prize to a prize provider such that said player may receive said selected prize from said prize provider.

14. A method as recited in claim 4 wherein said game is an action video game which provides a player with opportunities to utilize dexterity in increasing said game score.

20 15. A method as recited in claim 2 wherein said game is a card game in which said outcome of said game is, at least in part, randomly influenced.

16. A method as recited in claim 6, wherein said player may store said number of prize credits to an account, said number of prize credits being available to said player at future uses of said game apparatus to use in selecting a prize.

25 17. A method as recited in claim 2 wherein said game apparatus is one of the following: a bar top game provided at a bar, tavern, or restaurant environment, an electromechanical game provided at an arcade environment, and a computer device provided at a home of a player.

30 18. A method as recited in claim 2 further comprising a step of displaying advertising or promotional information on said game apparatus, wherein said advertising information pertains to a prize displayed in said prize table.

19. A method as recited in claim 18 wherein said advertising or promotional information portrays a particular brand of product, wherein said particular brand of product is available as a prize in said prize table.

20. A method as recited in claim 2 further comprising a step of receiving prize input information from an operator prior to said game being played by said player, said prize input information indicating said prize costs of said prizes.

21. A game apparatus incorporating a prize redemption system for players of said game apparatus, said game apparatus comprising:

10 display means for displaying images of a game;

means for providing said game on said game apparatus for a player to play and displaying said game on said display means, said means for providing said game include input means for a player to provide input to said game;

15 means for providing a number of prize credits for said player based on a result of said game;

means for providing a prize selection menu for said player, said prize selection menu being displayed on said display means, said prize selection menu displaying a plurality of prizes selectable by said player and a prize cost for each of said prizes in said prize selection menu, and wherein prize credits equal to said prize cost are subtracted from said player's 20 prize credits after said player has selected said prize; and

means for receiving an indication of a selection of a prize by said player, said indication resulting from input by player using said input means of said game apparatus;

25 means for providing a specific prize goal during said game, wherein if said specific prize goal is met, said player is eligible to receive a specific prize associated with said specific prize goal; and

means for dispensing a specific prize ticket describing said selected prize or said specific prize, said specific prize ticket being redeemable only for said described prize such that said player receives said described prize.

30 22. A method for providing a prize redemption system for at least one game apparatus, said prize redemption system being customizable by an operator and implemented

with a computation device, said method comprising:

displaying a prize table on a display of a computer apparatus;

receiving prize input which is stored on a computer readable medium and displayed in said prize table, said prize input characterizing a plurality of prizes that are to be available
5 in said redemption system to players of said game apparatus;

receiving payout input from said operator which is stored on a computer readable medium, said payout input indicating a desired amount of payout that said operator wishes to provide back to said players of said game apparatus in terms of a monetary value of said plurality of prizes; and

10 automatically determining prize information on said computer apparatus for each of said plurality of prizes, said prize information determining how frequently said prizes are to be won by players of said game apparatus, wherein said prize information is determined in accordance with said desired amount of payout and is stored on a computer readable medium, wherein said prize information is provided to said game apparatus to be used in
15 determining prizes for players of said game apparatus.

23. A method as recited in claim 22 wherein said game apparatus receives monetary income from players in exchange for allowing use of said game apparatus.

24. A method as recited in claim 23 wherein said prize input includes monetary costs
20 of said prizes.

25. A method as recited in claim 24 wherein said prize information includes a prize cost for each of said plurality of prizes in terms of prize credits winnable by players playing a game on said game apparatus, wherein said prize cost is determined in accordance with said desired amount of payout and is stored on said computer readable medium.

26. A method as recited in claim 25 wherein said payout input includes a global payout percentage value indicating a desired percentage of said monetary income earned by said game apparatus that said operator wishes to provide back to players in the form of said prizes.

27. A method as recited in claim 26 wherein said prize costs are determined using an
30 average number of prize credits awarded per game played on said game apparatus, wherein said average number of prize credits awarded per game is determined by recording on a

computer readable medium and averaging prize credits won by players over multiple games played on said game apparatus.

28. A method as recited in claim 26 wherein said list of prizes from said prize table is provided to said game apparatus to be displayed to said players as a menu by said game apparatus, said menu allowing said players to select a prize from said menu after winning at least one prize credit by playing a game on said game apparatus.

5 29. A method as recited in claim 24 wherein each of said prizes can be won as a specific prize by playing a game on said at least one game apparatus, and wherein said prize information includes a win ratio for each of said plurality of prizes in terms of how many 10 times said particular prize is won as a specific prize on said game apparatus, wherein said win ratio is determined in accordance with said desired amount of payout and is stored on said computer readable medium.

15 30. A method as recited in claim 29 wherein a prize is won as a specific prize when a player achieves a specific prize goal for a game on said game apparatus, said specific prize goal being achieved by skill of said player.

31. A method as recited in claim 30 wherein said payout input includes a global win percentage value indicating a desired percentage of said monetary income earned by said game apparatus that said operator wishes to provide back to players in the form of said specific prizes.

20 32. A method as recited in claim 29 wherein a prize is won as a specific prize when a specific prize goal is achieved on said game apparatus, said specific prize goal being achieved by random chance.

33. A method as recited in claim 24 wherein said prize input is received manually from said operator.

25 34. A method as recited in claim 24 wherein said prize table is displayed by a computer apparatus which includes said computer readable medium, and wherein said prize input is received from a remote apparatus linked to said computer apparatus.

35. A method as recited in claim 24 wherein said display is included in said game apparatus such that said prize table is displayed on said game apparatus, and wherein said 30 computer readable medium is included in a storage device in said game apparatus.

36. A method as recited in claim 24 wherein said prize input includes text or pictorial information describing said prizes.

37. A method as recited in claim 23 wherein said operator may manually adjust said prize information to provide a desired amount of said payout.

38. A method for providing a prize redemption system for a game apparatus, said 5 prize redemption system being customizable by an operator, said method comprising:

receiving a prize list on a game apparatus, said prize list including a names of a plurality of prizes available to be won by playing said game apparatus, wherein said game apparatus receives monetary income from players in exchange for use of said game apparatus, and wherein said players may win prize credits by playing said game apparatus;

10 receiving a cost of each of said prizes on said game apparatus; and

determining on said game apparatus a prize cost to be associated with each of said plurality of prizes, said prize cost being in terms of prize credits and determined in view of a desired profitability of said game apparatus, and wherein a player of said game apparatus may select one of said prizes by exchanging a number of prize credits equal to said prize cost of said selected prize.

15 39. A method as recited in claim 38 further comprising receiving a global payout percentage on said game apparatus, said global payout percentage indicating a percentage of said monetary income earned by said game apparatus that is to be used in providing said prizes to said players, and wherein said prize cost is determined such that said payout percentage may be approximately achieved.

20 40. A method as recited in claim 39 wherein said prize cost is determined using an average number of prize credits awarded per game played on said game apparatus, wherein said average number of prize credits awarded per game is determined by recording and averaging prize credits won by players over multiple games played on said game apparatus.

25 41. A method as recited in claim 40 wherein said game apparatus offers specific prizes to players when a specific prize goal is met, and further comprising receiving a global specific prize win percentage on said game apparatus, said global win percentage indicating a percentage of said monetary income earned by said game apparatus that is to be used in providing said specific prizes to said players.

30 42. A method as recited in claim 41 further comprising determining on said game apparatus a specific prize individual ratio associated with each of said prizes, said individual ratio how frequently said associated prize is to be awarded as a specific prize when said

specific prize goal is met.

43. A method as recited in claim 42 wherein more valuable prizes in said prize table are first checked when awarding said specific prize.

5 44. A method as recited in claim 42 wherein said specific prize individual ratio is modified by a normalization factor based on a frequency of players achieving said specific prize goal.

10 45. A method as recited in claim 44 wherein said specific prize individual ratio is determined using a hit ratio describing how many times, on average, a specific prize is won on said game apparatus, wherein said hit ratio is determined by recording and averaging occurrences of players winning specific prizes over multiple games on said game apparatus.

46. A method as recited in claim 41 wherein said prize list, said cost of each of said prizes, said payout percentage, said win percentage, said prize cost, and said specific prize individual ratios are displayed on a display screen of said game apparatus.

15 47. A method as recited in 40 wherein said prize cost may be manually adjusted by said operator, such that said global payout percentage is adjusted by said redemption system based on said manual adjustments.

48. A method for providing a prize redemption system for a game apparatus, said prize redemption system being customizable by an operator, the method comprising:

20 displaying a prize table on a display of said game apparatus;

receiving prize input from said operator at said game apparatus, said prize input being stored on a computer readable medium of said game apparatus and displayed in said prize table, said prize input describing a plurality of prizes that are to be available in said redemption system to players of said game apparatus, wherein said game apparatus receives monetary income from players in exchange for use of said game apparatus;

25 receiving payout input from said operator which is stored on said computer readable medium, said payout input indicating a desired amount of payout that said operator wishes to provide back to players of said game apparatus in terms of a monetary value of said plurality of prizes;

30 determining a prize cost for each of said plurality of prizes in terms of said prize

credits winnable by playing a game on said game apparatus, wherein said prize cost is determined in accordance with said desired amount of payout and is stored in said computer readable medium;

receiving monetary input from a player on said game apparatus;

5 implementing a game process and receiving input from said player during said game process, wherein said player is provided with a game score based on an outcome of said game process, wherein said player is provided with a number of prize credits based on said game score;

10 displaying a prize selection screen on said display, said prize selection screen portraying a plurality of prizes and a prize cost for each of said prizes;

receiving a selection from said player selecting at least one of said prizes, wherein said selected prize has a prize cost less than or equal to said number of prize credits provided to said player; and

15 dispensing a physical indication of said selected prize to said player, wherein said player is able to redeem at least one of said prizes with said dispensed indication.

49. A method as recited in claim 48 wherein said prize table is downloaded from a remote server coupled to said game apparatus, said remote server being coupled to said game apparatus using a local area network or a wide area network.

50. A method as recited in claim 48 further comprising a step of displaying advertising information on said game apparatus, said advertising information portraying a brand or a product having said brand, wherein a prize having said brand is displayed on said prize selection screen and may be selected as a prize by said player.

51. A method as recited in claim 50 wherein said prize having said brand is a discount on a price of said advertised product when purchasing said advertised product, wherein said dispensed physical indication is a coupon indicating said price discount.

52. A method as recited in claim 48 wherein said selected prize includes an exchange of said prize credits for game credits so that said player may play additional games on said game apparatus.

30 53. A game apparatus providing a prize redemption system, the game apparatus

comprising:

a game processor for controlling a game on said game apparatus, said game providing a number of prize credits to a player in connection with said player playing said game;

5 receiving means for receiving monetary input from said player, said receiving means being coupled to said game processor;

an input device coupled to said game processor and providing commands to said game from said player;

an output display device coupled to said game processor for providing visual feedback for said game;

10 means for providing a prize selection menu on said display device, said prize selection menu presenting a plurality of prizes, each of said prizes having a prize credit cost which has been determined in accordance with a desired payout value of an operator of said game apparatus, wherein said player selects one of said prizes using said input device, said selected prize having a prize credit cost less than or equal to said prize credits awarded to
15 said player; and

a prize output device coupled to said game processor for outputting an indication of said selected prize to said player such that said player may use said indication to redeem said selected prize.

54. A game apparatus as recited in claim 58 wherein said game is a game of skill.

20 55. A game apparatus as recited in claim 58 wherein said desired payout value of said operator is a percentage of all monetary input received by said game apparatus that said operator desires to give back to said players in terms of prizes.

25 56. A game apparatus as recited in claim 60 further comprising means for selecting a prize credit game for receiving said prize credits based on said game score, and means for selecting a tournament game for competing in a tournament with other players of said game apparatus for a tournament prize.

57. A game apparatus as recited in claim 60 wherein said prize output device is a dispenser capable of dispensing a specific prize ticket portraying said prize selected by said player.

30 58. A game apparatus as recited in claim 60 wherein said prize output device writes

electronic data on a storage medium that said player may remove from said game apparatus, said electronic data indicating said selected prize.

59. A game apparatus as recited in claim 60 further comprising a universal ticket dispenser for dispensing a plurality of universal tickets equal to said number of prize credits.

5 60. A game apparatus as recited in claim 58 wherein said game apparatus is provided in a bar or a restaurant gaming environment.

10 61. A game apparatus as recited in claim 58 wherein said game apparatus is included in a networked game system having a plurality of said game apparatuses and a server, and wherein said game apparatuses and server are linked using a local area network or a wide area network.

62. A method for providing a tournament game on a game apparatus, the method comprising:

(a) providing a tournament game for a player on said game apparatus;

15 (b) receiving monetary input from a player to allow said player to participate in a tournament by playing said tournament game;

(c) contributing at least a portion of said monetary input towards a tournament prize;

20 (d) implementing said tournament game, including receiving input from said player during said tournament game, and providing a game score based on an outcome of said tournament game;

(e) repeating steps (a) through (d) until said tournament is determined to have concluded; and

(f) providing said tournament prize to one or more winning players selected from said players participating in said tournament.

25 63. A method as recited in claim 62 wherein said providing a tournament game includes offering a player a choice to participate in said tournament or to play a game on said game apparatus and not participate in said tournament.

64. A method as recited in claim 62 wherein said player is allowed to participate in said tournament only after playing a predetermined number of non-tournament games on said

game apparatus.

65. A method as recited in claim 62 wherein said tournament prize is in a form of prize credits awarded to said winning players, wherein a prize can be selected by a winning player using said prize credits.

5 66. A method as recited in claim 62 wherein said prize is selected by said winning player using a menu presented on said game apparatus.

67. A method as recited in claim 62 wherein said tournament prize is cash, and wherein said at least a portion of said monetary input is directly added to said tournament prize.

10 68. A method as recited in claim 67 wherein said tournament prize includes a seed monetary value to which said contributed portions of monetary input are added.

69. A method as recited in claim 67 wherein said tournament is determined to have concluded after a predetermined time period has elapsed.

15 70. A method as recited in claim 67 wherein said winning players are selected as a predetermined number of participants in said tournament who have achieved the highest game scores in said tournament.

71. A method as recited in claim 62 wherein a plurality of tournament games are provided on said game apparatus, and wherein said player can select a particular tournament game in which to participate.

20 72. A method as recited in claim 62 further comprising a plurality of said game apparatuses linked together such that players of any of said linked game apparatuses may participate in said tournament by playing a tournament game on any of said linked game apparatuses.

25 73. A method for implementing a specific prize game on a game apparatus, the method comprising the steps of:

receiving input game commands from a player of said game apparatus during a game process;

30 determining if said player has won a specific prize during said game process, said specific prize being a particular, indicated good or service awarded to players;

determining an identity of said specific prize won by said player, said specific prize being selected from a plurality of available types of specific prizes; and

indicating with said game apparatus to said player said identity of said selected specific prize won by said player.

5

74. A method as recited in claim 74 wherein said step of determining if said player has won a specific prize includes examining a skilled performance of said player during said game process.

10 75. A method as recited in claim 74 wherein said step of determining if said player has won a specific prize includes determining if said player has achieved a predetermined goal associated with winning said specific prize during said game process.

15 76. A method as recited in claim 74 wherein said step of determining if said player has won a specific prize includes determining if said player is an n th player of said game apparatus since a specific prize was last won by a player of said game apparatus, where n is a predetermined number.

77. A method as recited in claim 74 wherein said step of determining if said player has won a specific prize includes determining if said player is an n th player of said game apparatus since a specific prize was last won by a player of said game apparatus, where n is a randomly-determined number.

20 78. A method as recited in claim 74 wherein said specific prize won by said player is randomly selected from said plurality of available specific prizes.

79. A method as recited in claim 73 wherein said specific prize won by said player is selected in a predetermined order of said plurality of available specific prizes.

25 80. A method as recited in claim 74 wherein said identity of said specific prize is indicated to said player on a display screen included in said game apparatus.

81. A method as recited in claim 73 further comprising dispensing at least one physical specific prize ticket that indicates said identity of said specific prize won by said player, wherein said at least one physical specific prize ticket includes indicia identifying said specific prize won by said player.

30 82. A method as recited in claim 74 further comprising dispensing a number of

universal tickets to said player based upon a game score achieved by a skilled performance of said player during said game process, said universal tickets being separate from said specific prize and separate from said determination of whether said player has won a specific prize.

5 83. A method as recited in claim 73 wherein said step of determining if said player has won a specific prize during said game process includes determining whether another player playing a second game apparatus linked to said game apparatus has won said specific prize.

10 84. A game apparatus for allowing a player to win a specific prize during a game process, the game apparatus comprising:

a game processor for controlling a game process on said game apparatus, wherein said game processor is operative to determine whether said player has won a specific prize from said game process;

15 an input device for providing skilled player input to said game processor to influence said game process;

an output device for providing feedback to said player in response to commands from said game processor; and

20 a specific prize ticket dispenser for providing a physical specific prize ticket to said player which can be exchanged only for said specific prize won from said game process and indicated on said specific prize ticket.

25 85. A game apparatus as recited in claim 84 wherein said output device includes a display screen, and wherein said game processor outputs messages for said player indicating which prizes are available when playing said game apparatus and said particular prize for which said specific prize ticket can be exchanged.

86. A game apparatus as recited in claim 85 wherein said game processor randomly determines whether said player has won said specific prize.

30 87. A game apparatus as recited in claim 85 wherein said specific prize is determined to have been won based on whether said player skillfully achieves a predetermined goal during said game process.

88. A game apparatus as recited in claim 87 wherein said specific prize associated with said predetermined goal can be changed by an operator of said game apparatus.

5 89. A game apparatus as recited in claim 86 wherein said specific prize is one a plurality of specific prizes available to be won on said game apparatus by said player, and wherein more valuable prizes have a less chance of being awarded to said player than less valuable prizes.

90. A game apparatus as recited in claim 84 wherein said specific prize ticket is printed by a printing device, said ticket including indicia portraying said specific prize.

10 91. A game apparatus as recited in claim 84 further comprising a universal ticket dispenser for dispensing universal tickets to said player, said universal tickets being awarded based on said player's performance during said game and which can be exchanged for any of a plurality of available prizes, said universal tickets being separate from said specific prize.

15 92. A game apparatus as recited in claim 85 wherein said display screen is a touch screen responsive to contact with said player such that said input device is included in said display screen.

20 93. A game apparatus as recited in claim 84 further comprising a scoring apparatus for accumulating a game score and a progressive score, said progressive score being accumulated over a plurality of games played on said game apparatus, and wherein said scoring apparatus contributes to said progressive score and adds said progressive score to said game score when said player achieves a progressive goal during said game process.

94. A game apparatus as recited in claim 84 further comprising a plurality of said game apparatuses linked to each other and allowing a plurality of players of said linked game apparatuses to participate in a single game process.

25 95. A video game apparatus for awarding a specific prize to a player, said video game apparatus including:

a game processor;

a display screen coupled to said game processor for outputting images of a playing field and a pointer that moves relative to said playing field;

30 an input device coupled to said game processor for allowing a player to input skilled

game commands during a game process, said skilled game commands including a command to stop said pointer from moving relative to said playing field;

5 a scorer for updating a game score in accordance with a position of said stopped pointer in relation to said playing field;

10 means for determining whether said player has won a specific prize during said game process, wherein said specific prize is a particular one of a plurality of types of specific prizes that can be won by said player; and

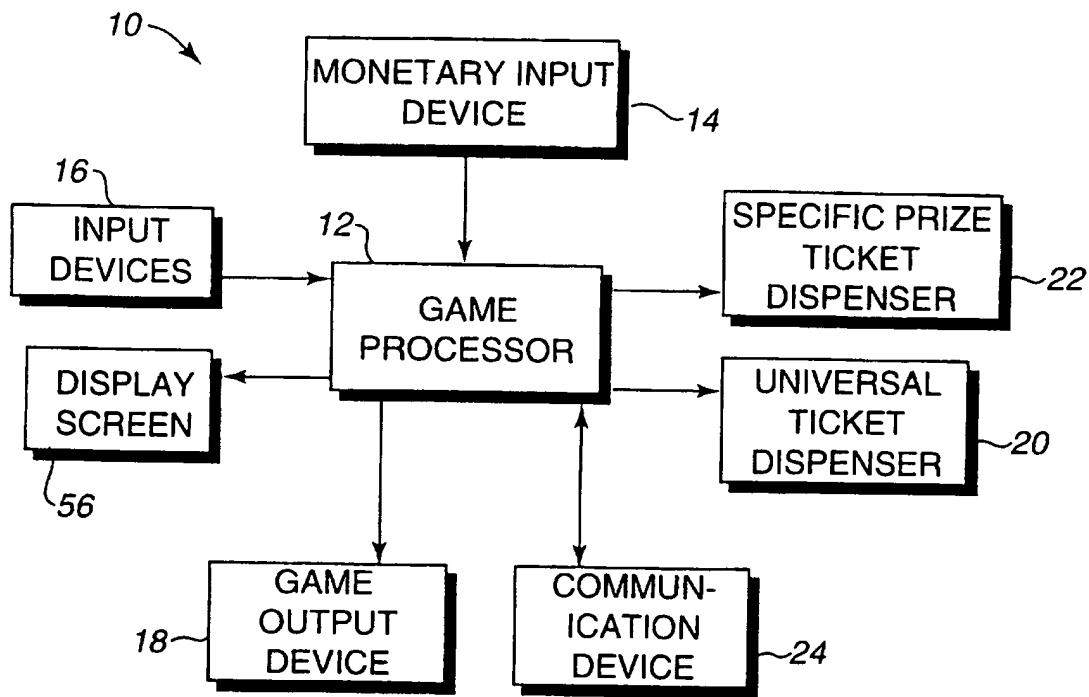
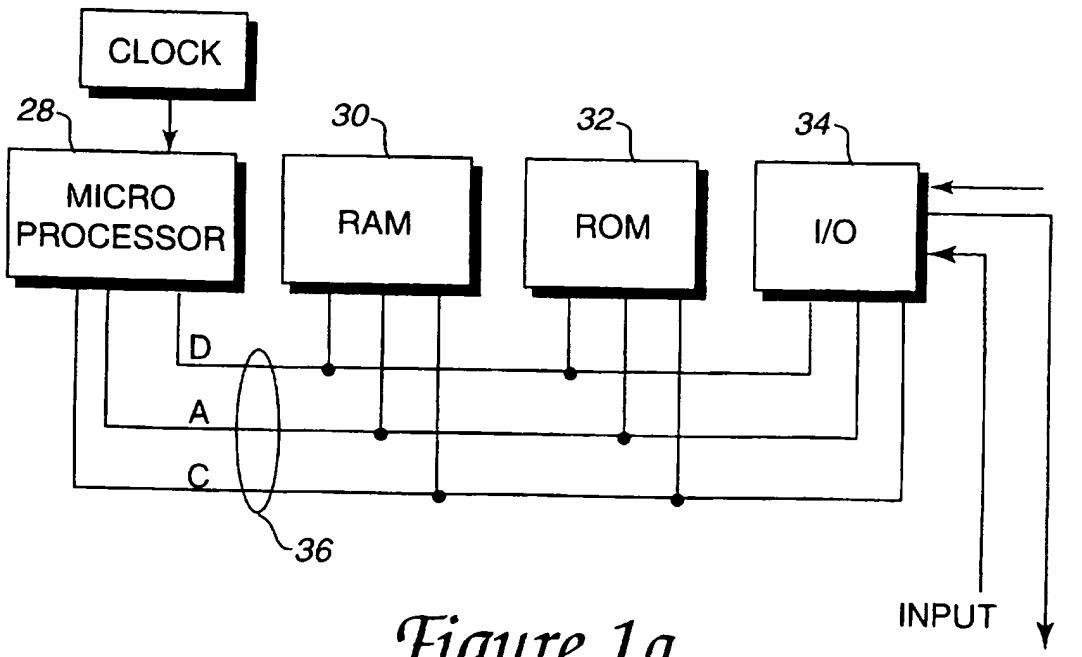
15 displaying on said video screen an identity of said specific prize won by said player.

96. A video game apparatus as recited in claim 95 wherein said identity of said specific prize displayed on said display screen is displayed until an operator verifies that said player has won said prize and resets said game apparatus.

97. A video game apparatus as recited in claim 95 further comprising an award dispenser coupled to said game processor for dispensing a specific prize ticket to said player, said specific prize ticket having indicia indicating said particular specific prize and being exchangeable for said specific prize portrayed by said indicia.

98. A video game apparatus as recited in claim 97 wherein said means for determining determines that said player has won said specific prize when said player stops said pointer relative to a particular location on said playing field, wherein said playing field is substantially circular and includes a plurality of scoring segments to which said pointer can point.

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*Figure 1**Figure 1a*

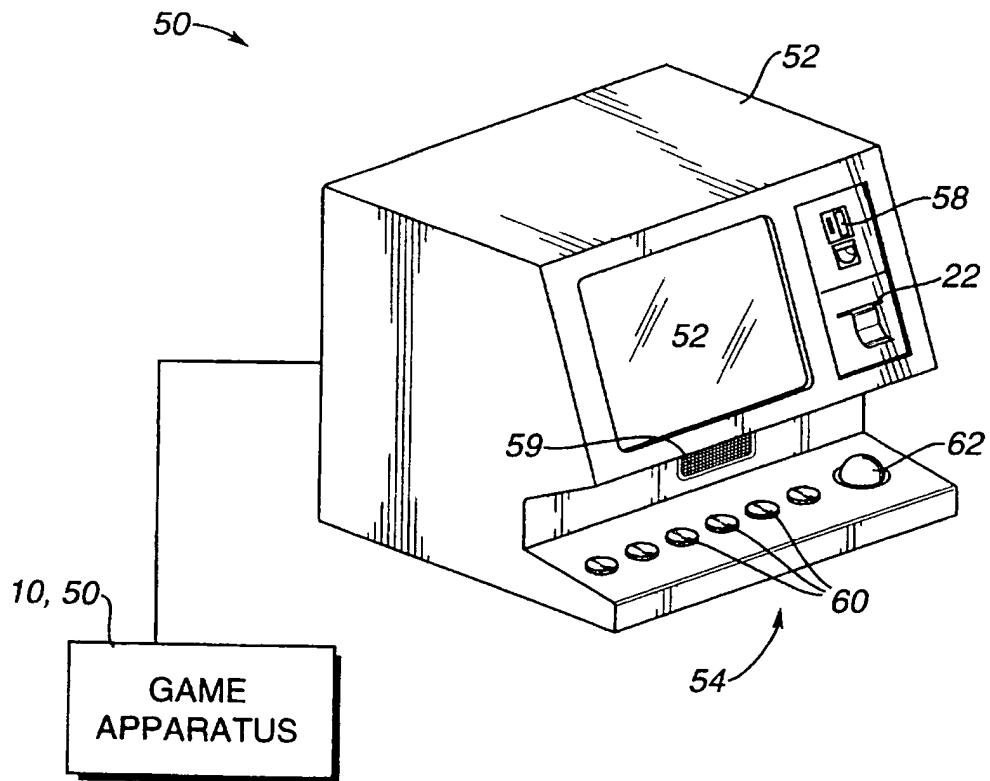


Figure 2

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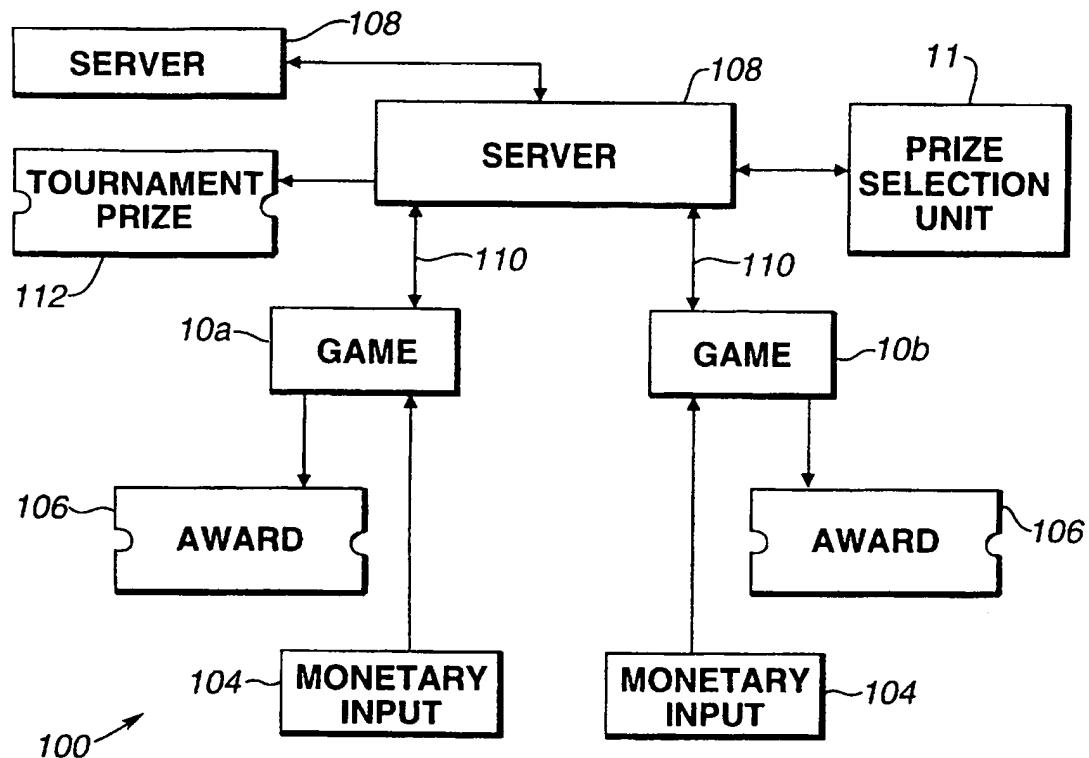


Figure 3

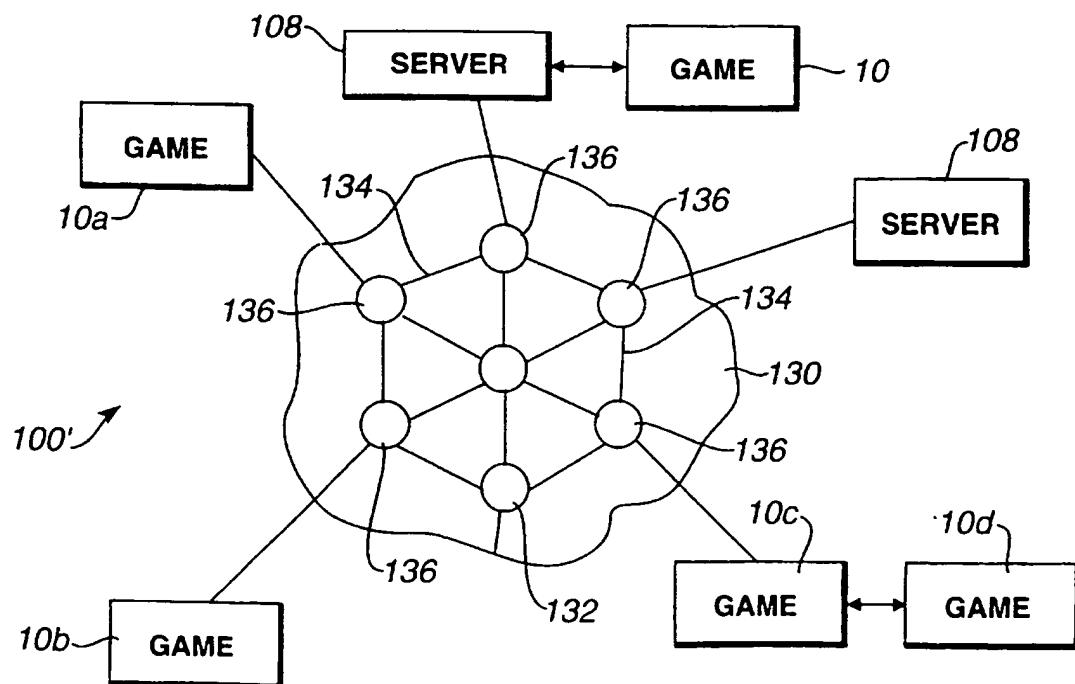


Figure 4

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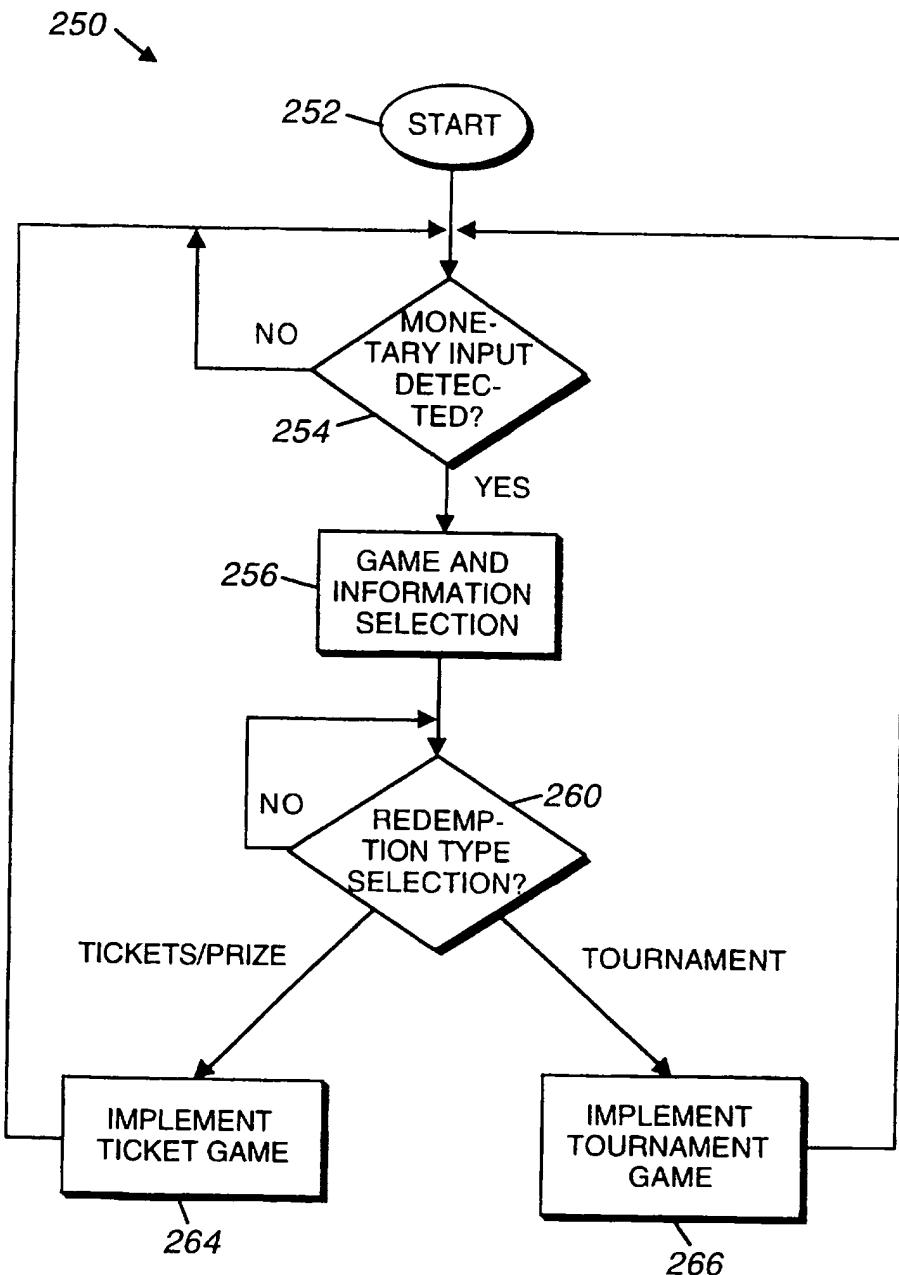


Figure 5

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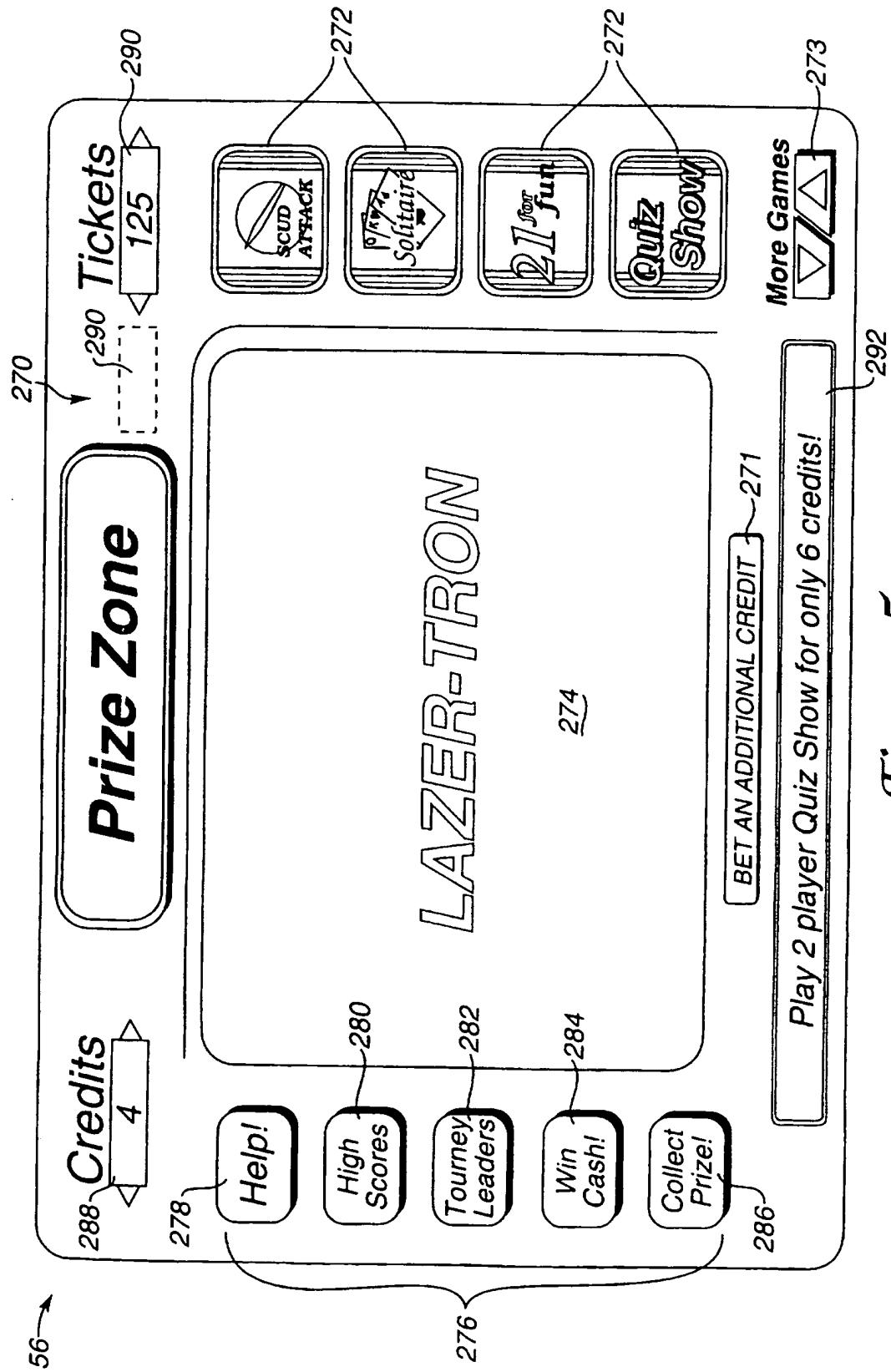


Figure 5a

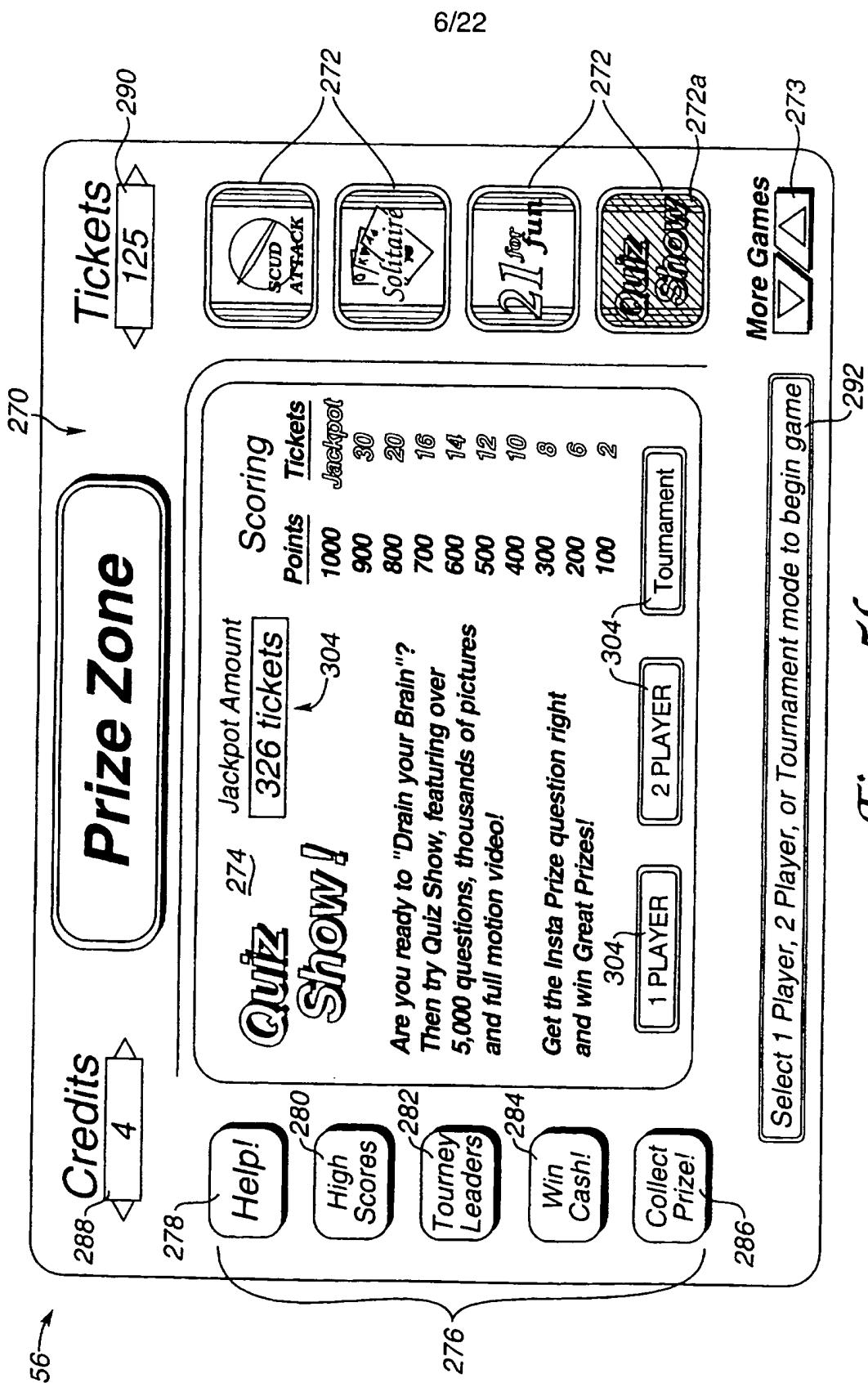


Figure 5b

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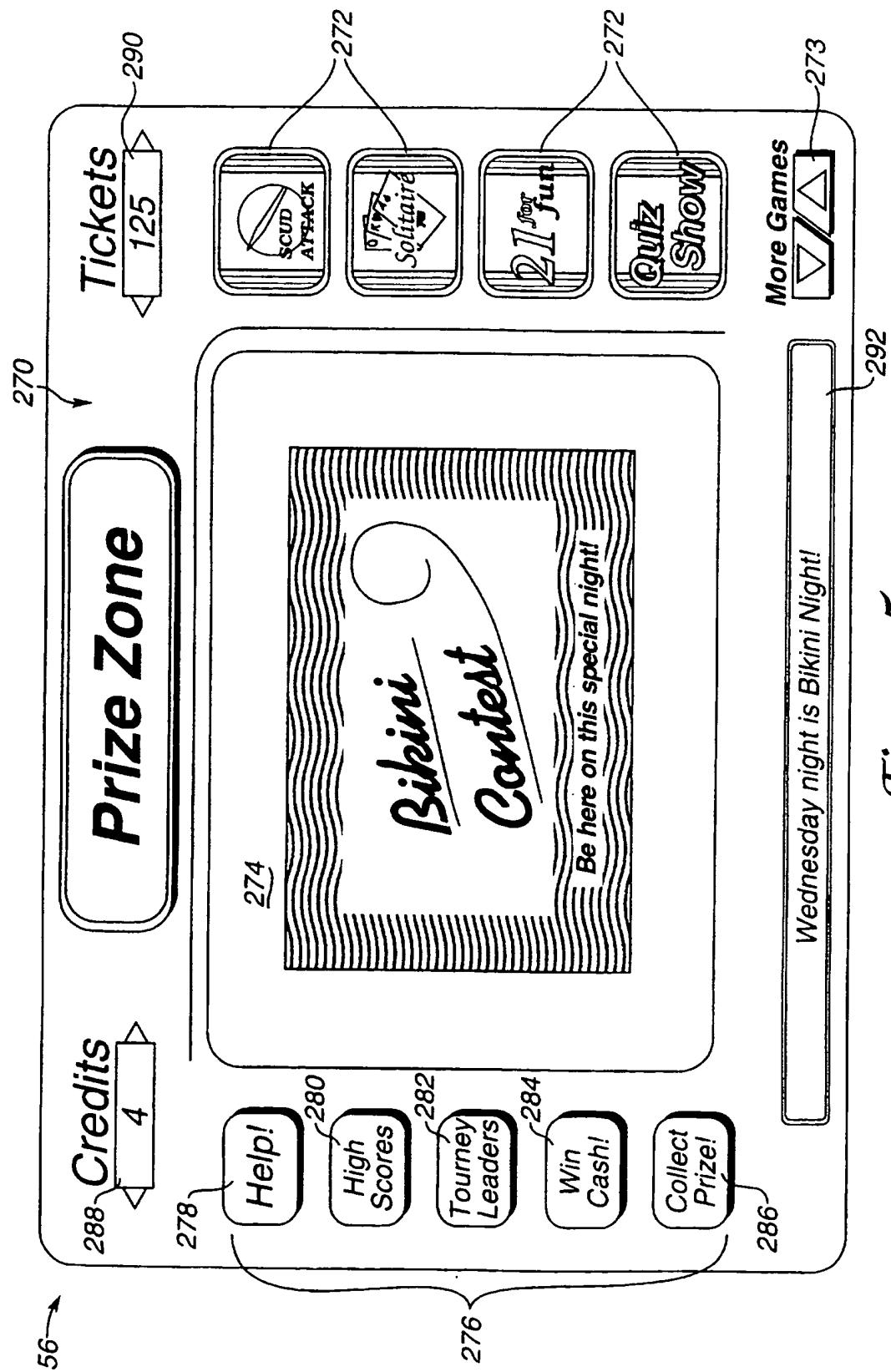


Figure 5c

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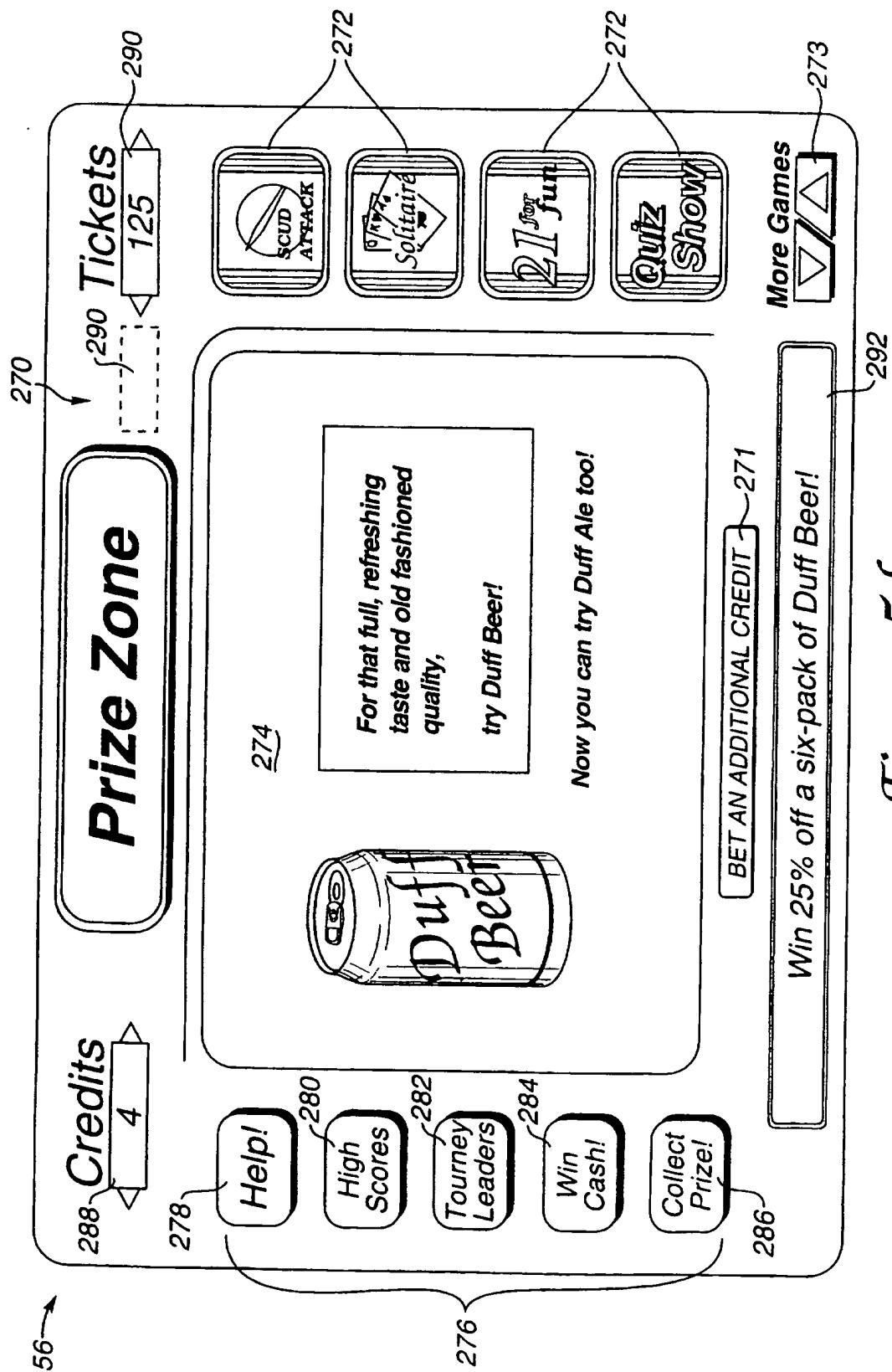
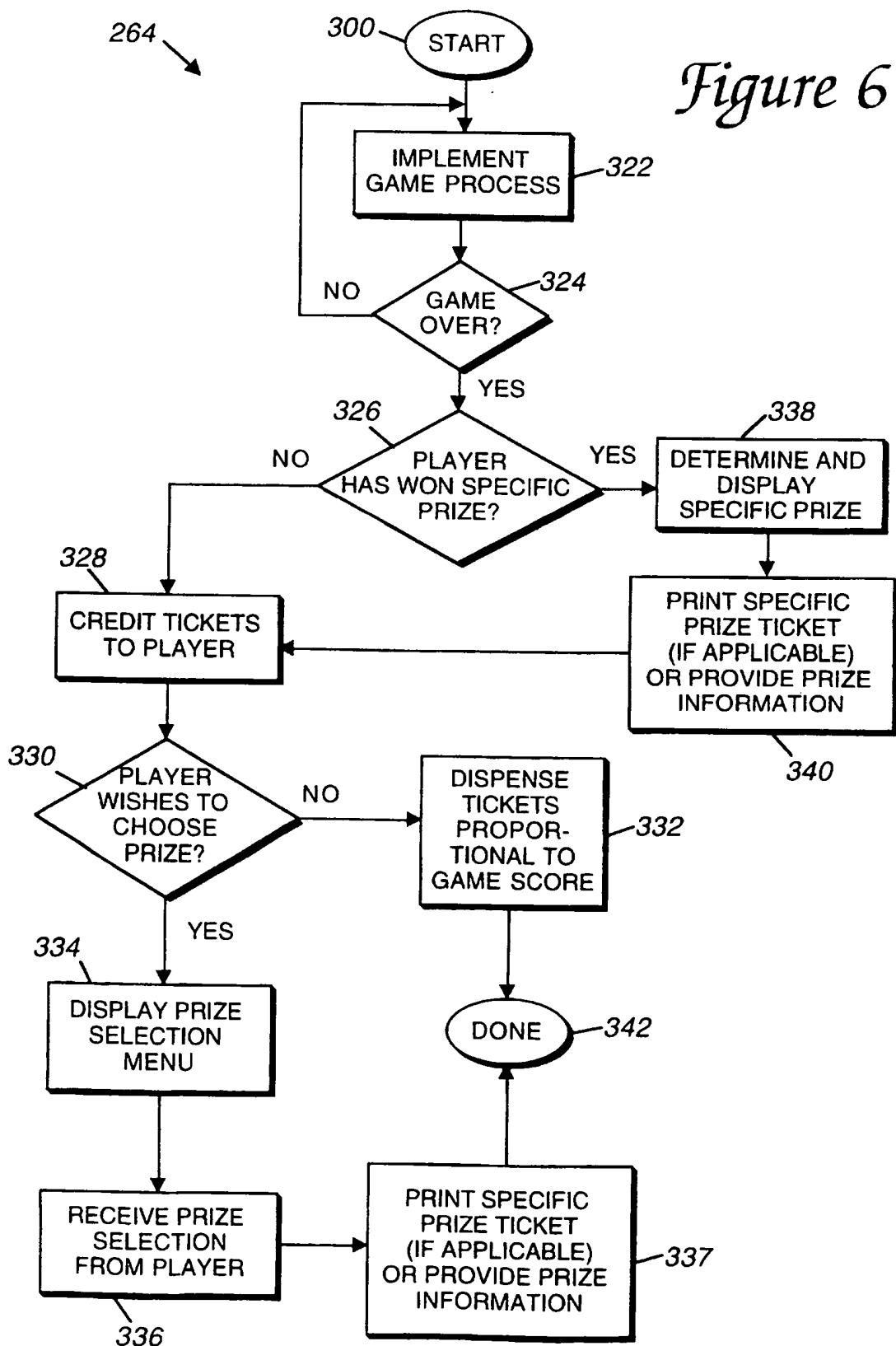


Figure 5d

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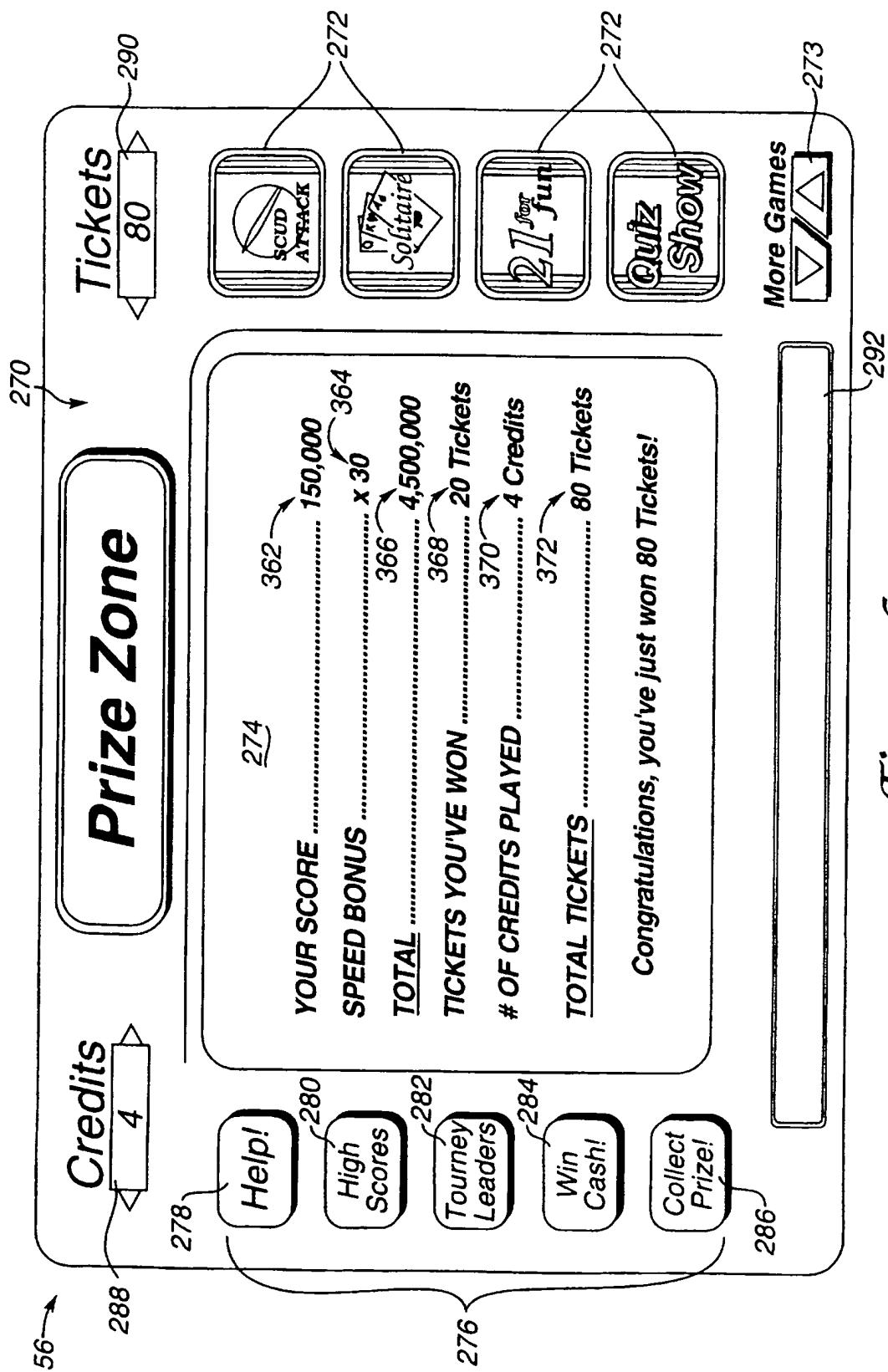


Figure 6a

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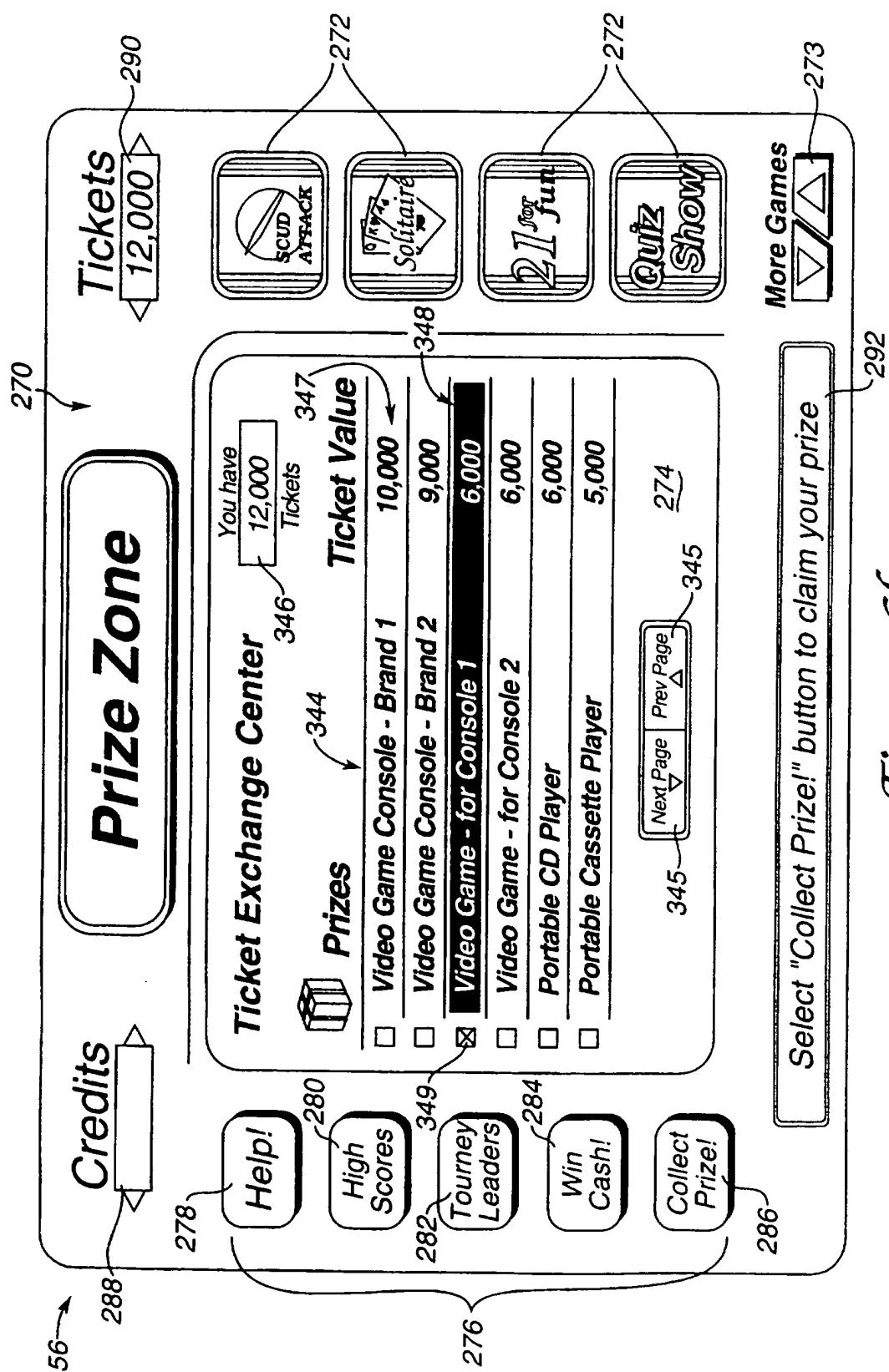


Figure 6b

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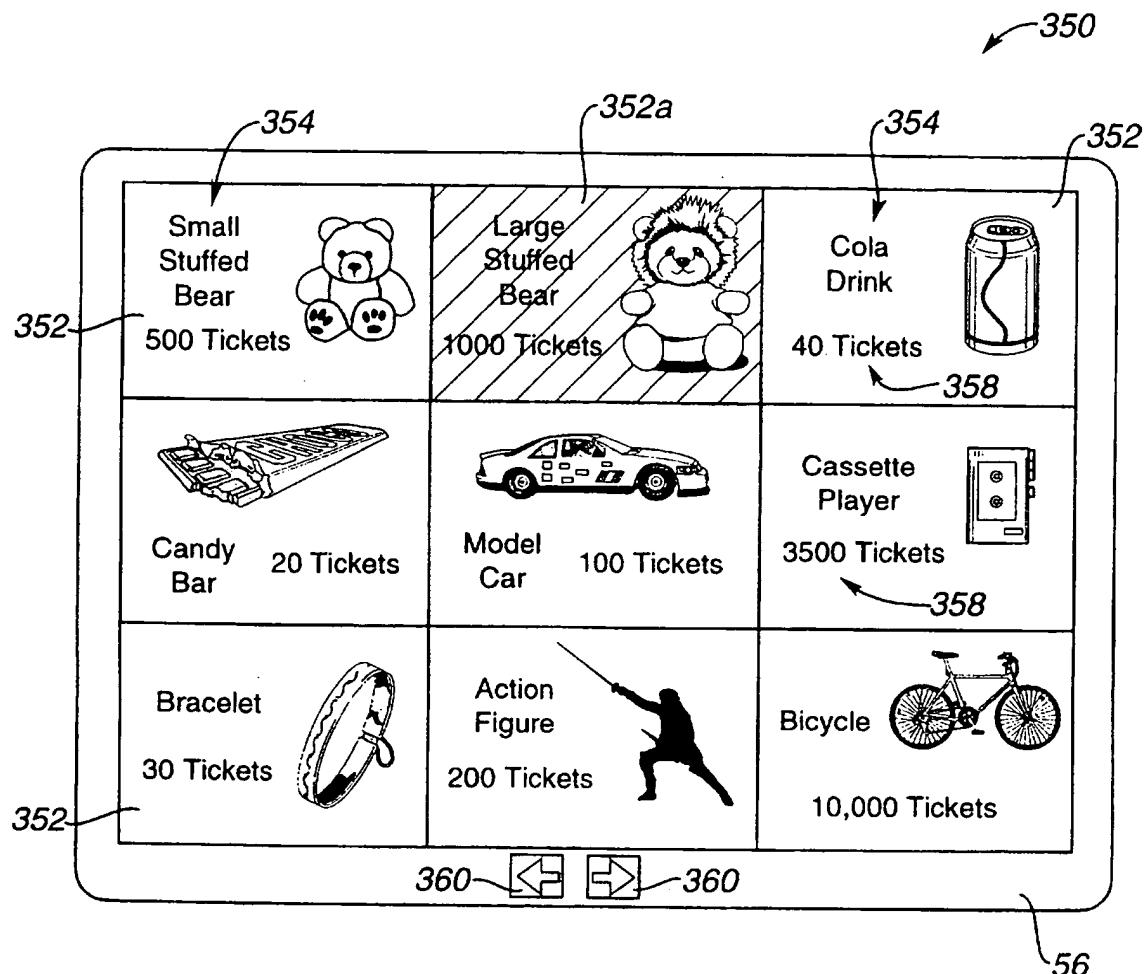


Figure 6c

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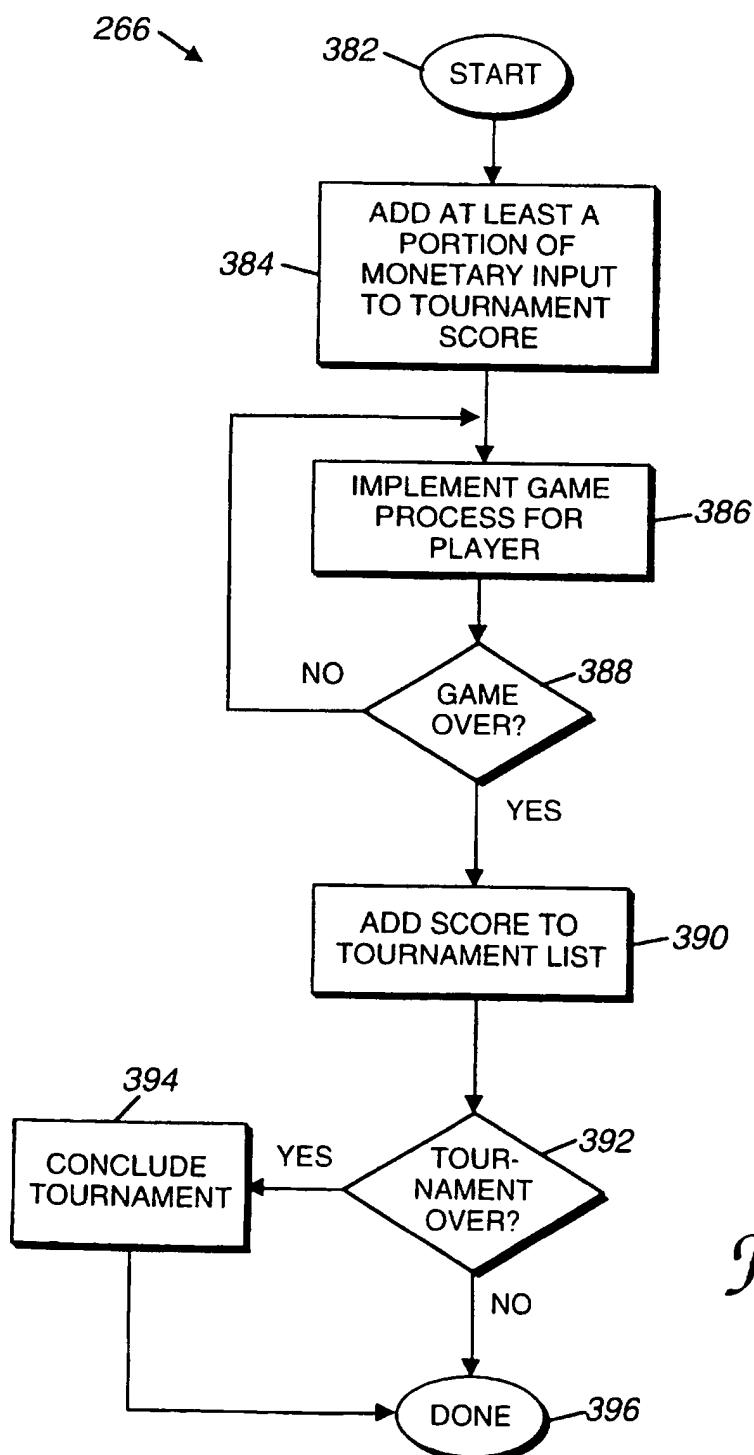
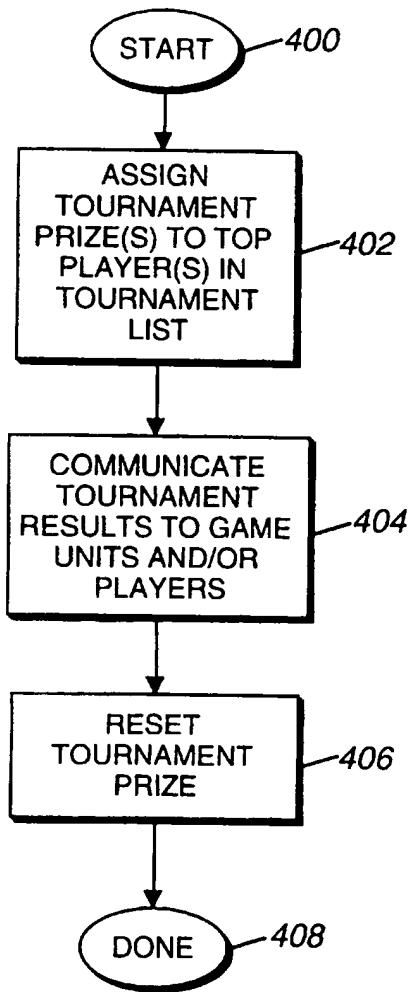


Figure 7

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*Figure 8*

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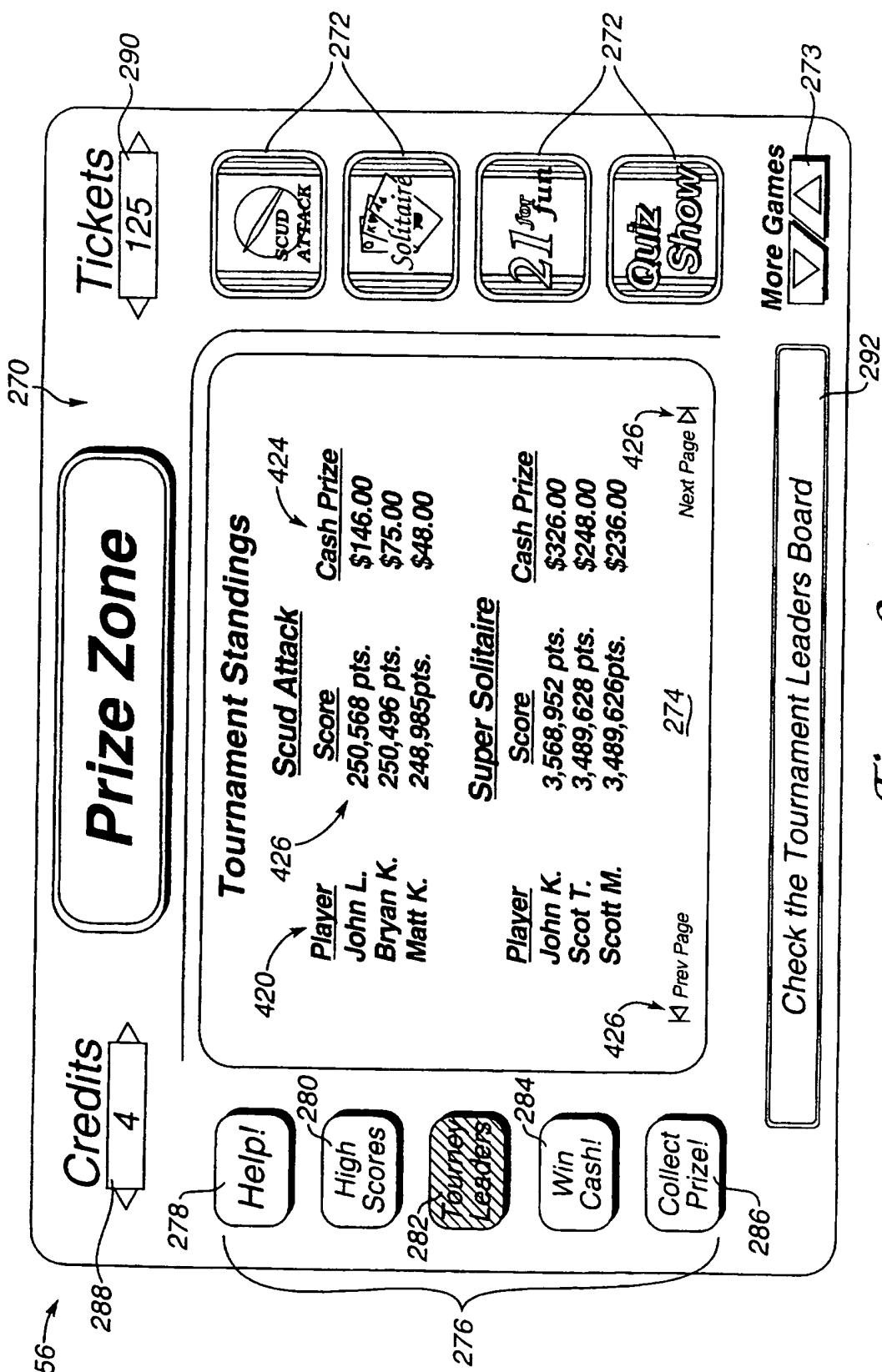
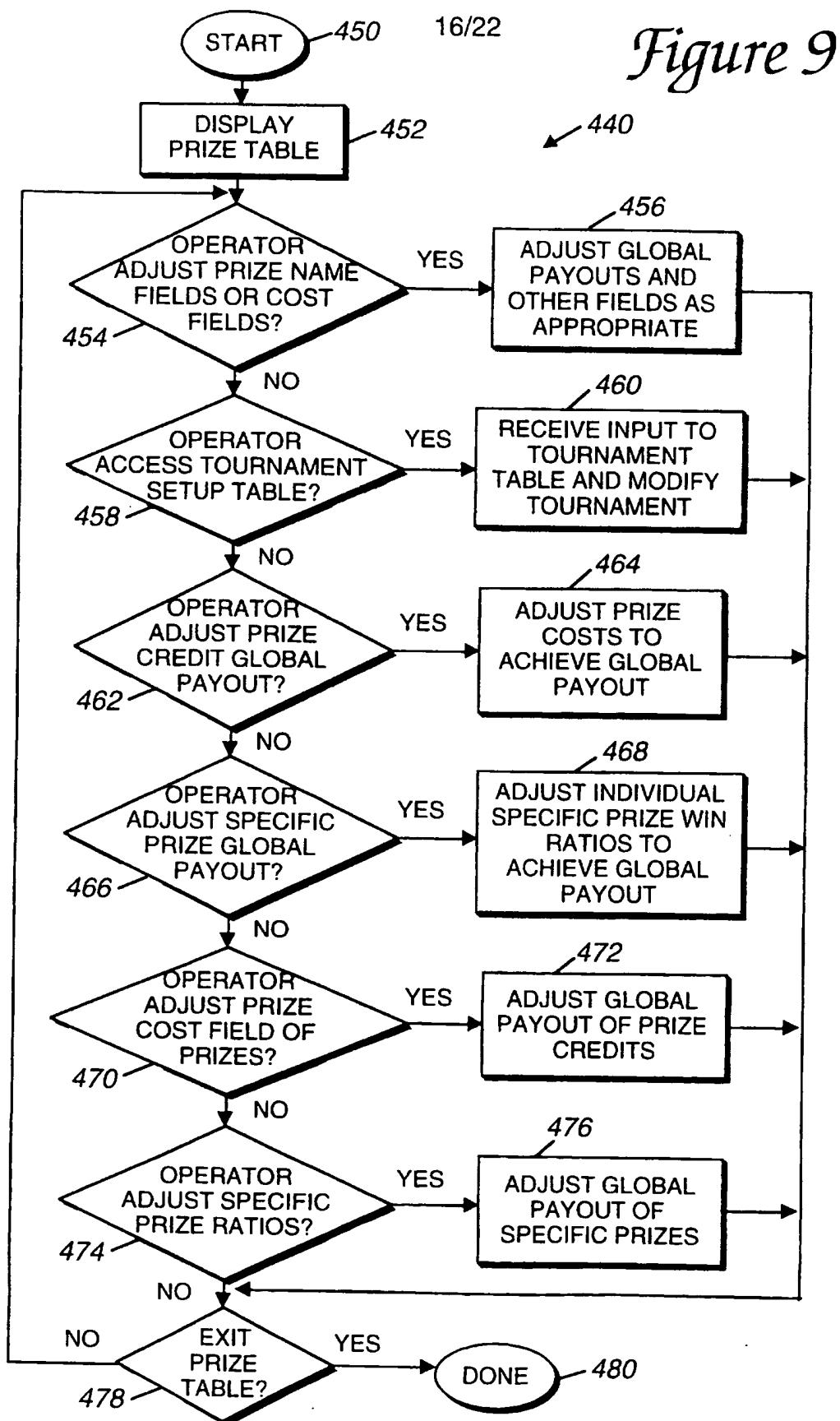


Figure 8a

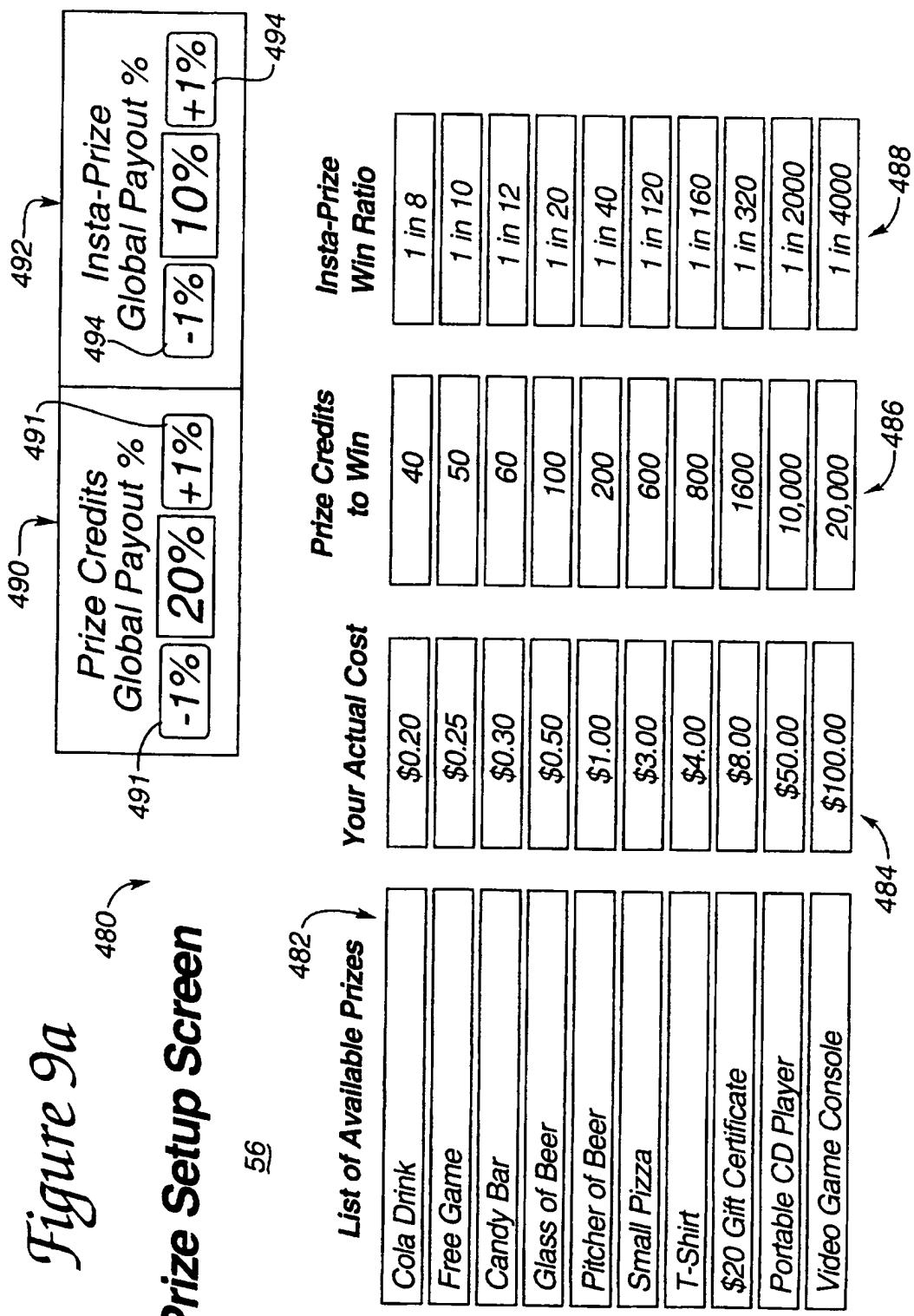


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Prize Setup Screen

Figure 9a

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GAME	Tournament On/Off	Games Required	Cost/ Game (coins)	% Applied to Tournament Prize	Seed Money	WINNING % FOR PLACES					Start Date	Start Time	End Date	End Time	Repeat Tournament
						1st Place	2nd Place	3rd Place	4th Place	5th Place					
SCUD ATTACK	ON	3	1	50%	\$50	40%	25%	15%	10%	10%	2/1/97	8:00	2/14/97	23:00	NO
SOLITAIRE	OFF														
QUIZ	ON	1	1	30%	\$30	60%	30%	10%	0%	0%	2/20/97	14:00	3/20/97	12:00	YES
FUN 21	NOT AVAIL.														

Figure 96

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Figure 10

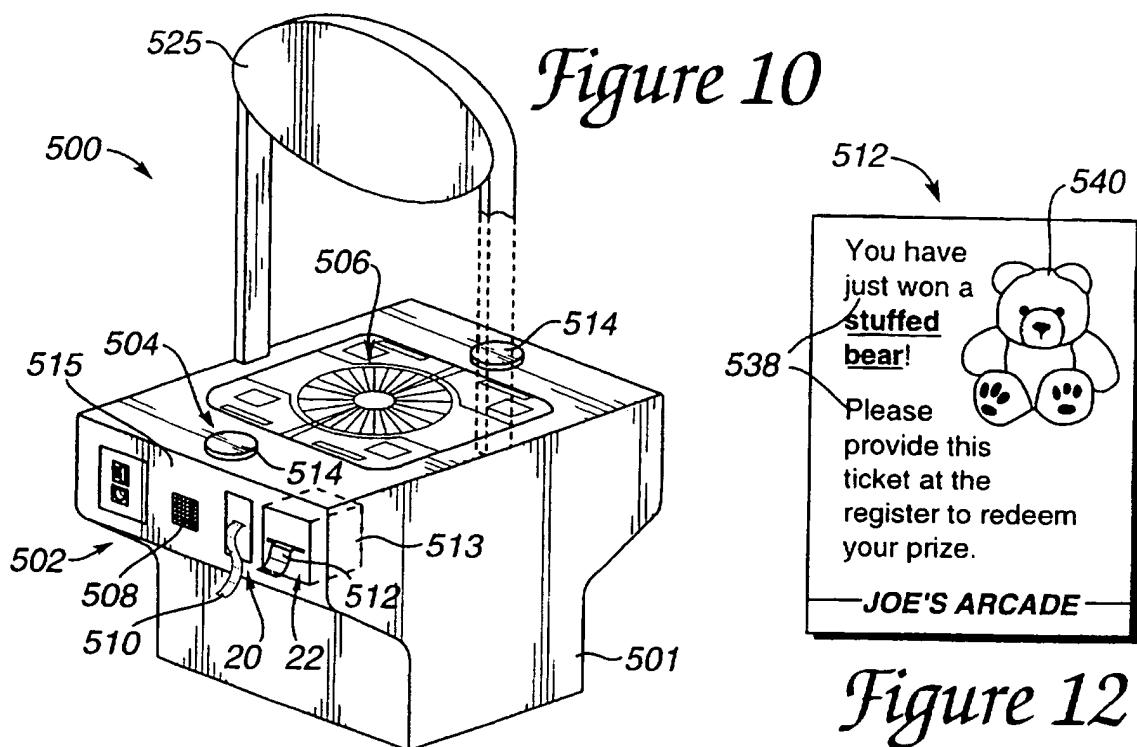


Figure 12

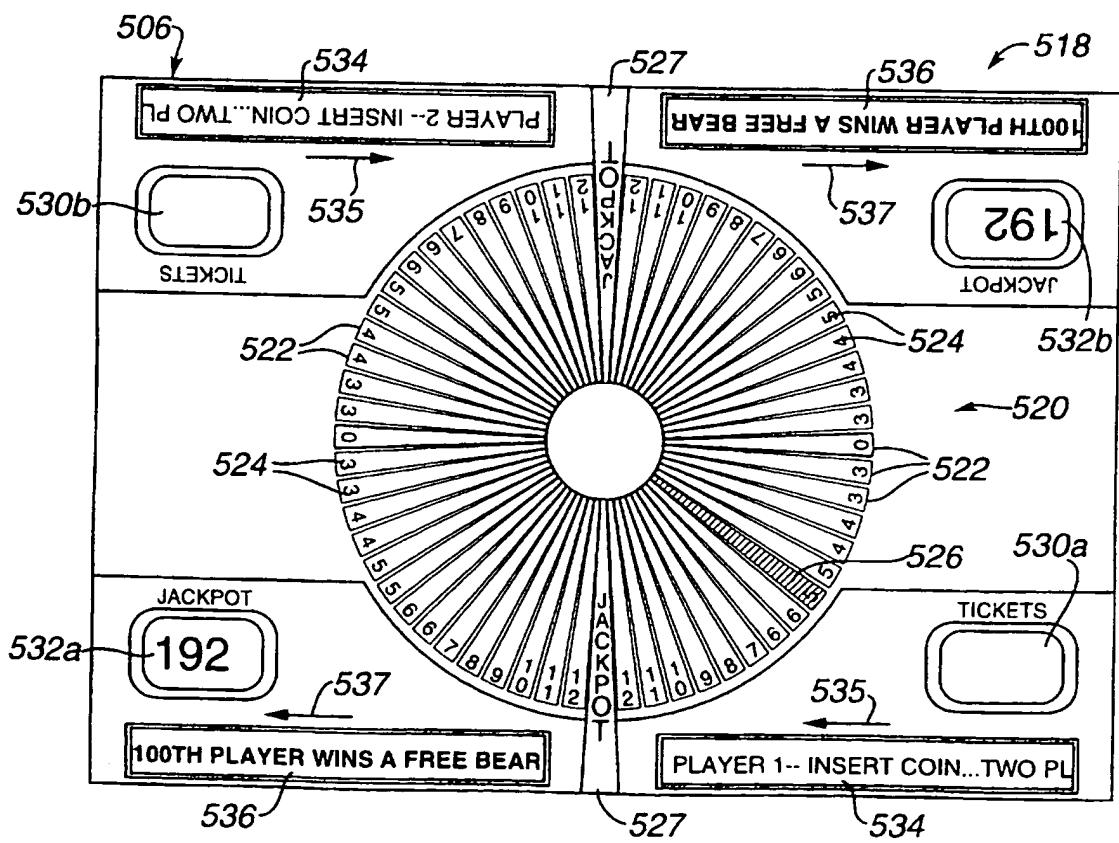


Figure 11a

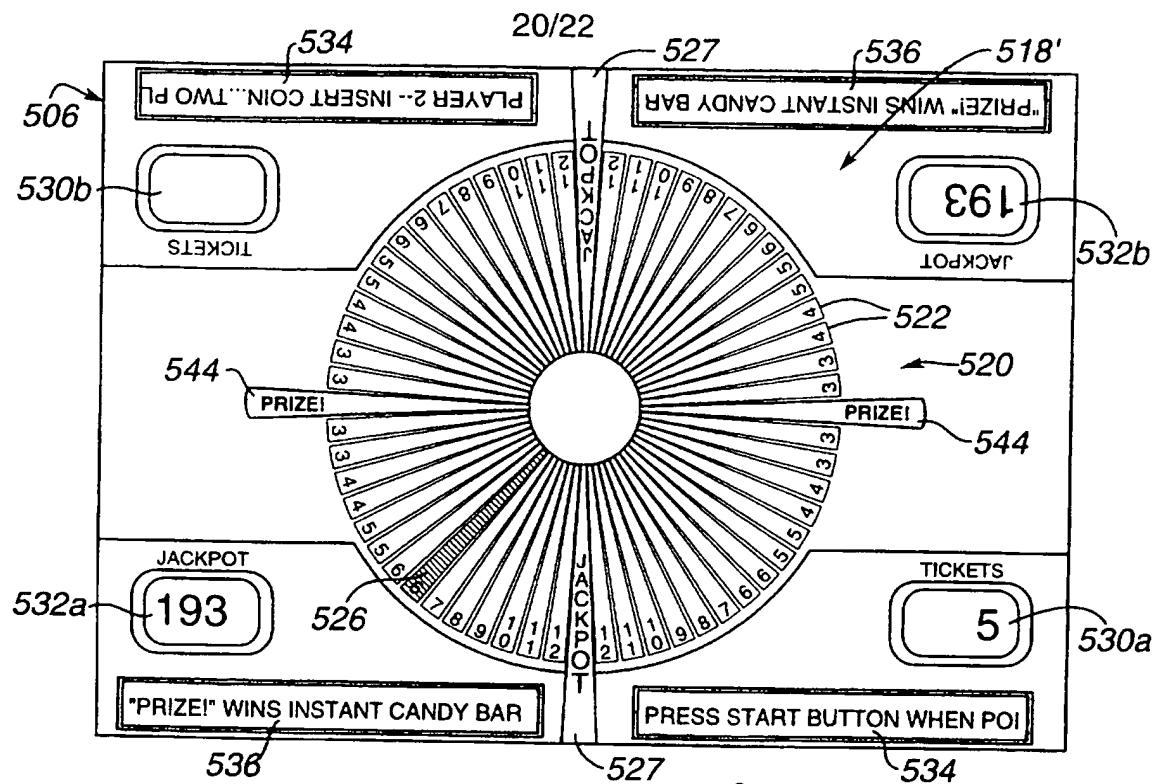


Figure 11b

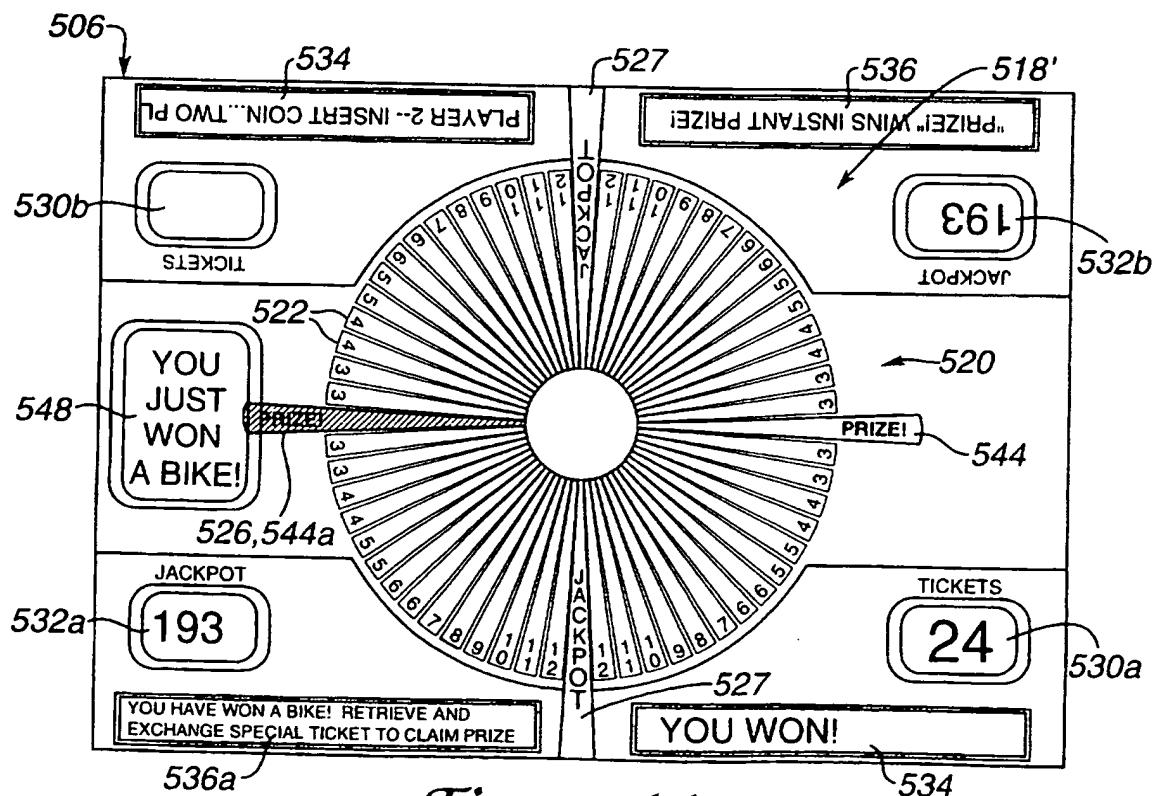
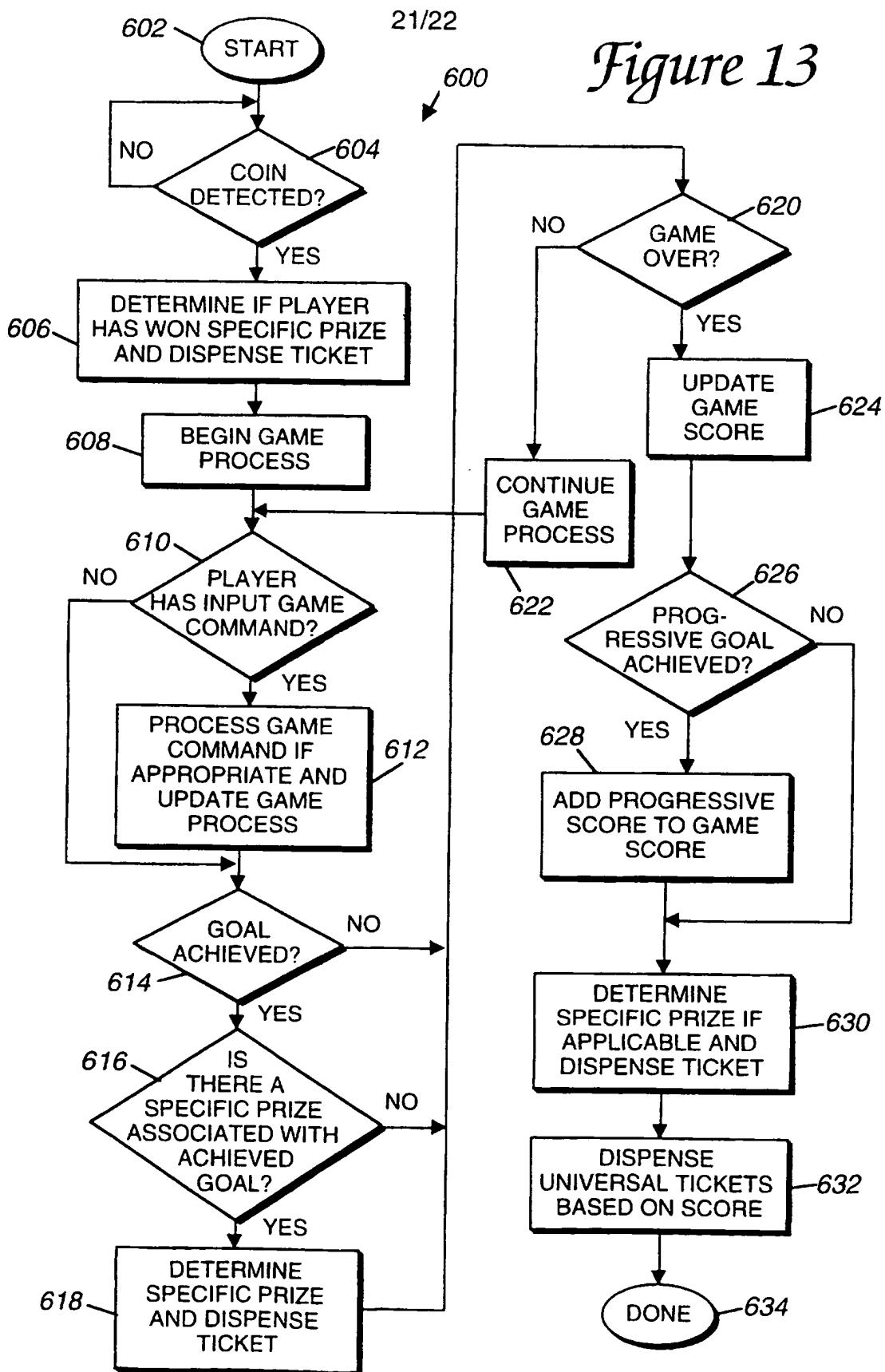
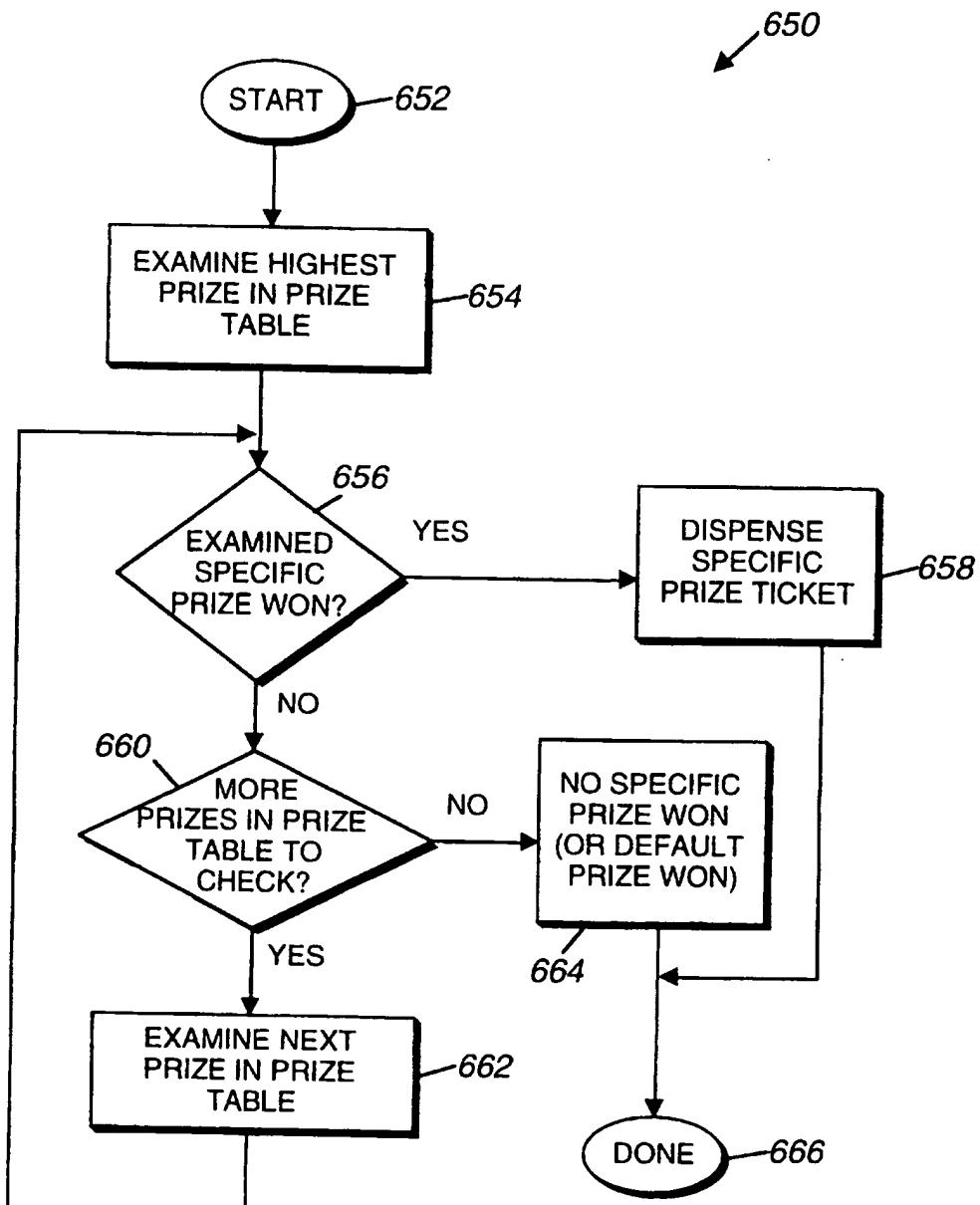


Figure 11c



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*Figure 14*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/05600

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) A63F 9/24

US CL 463/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 463/1, 16, 23, 30, 36, 37

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
noneElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
none

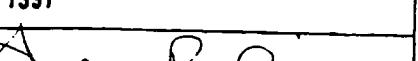
C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,582,324 (KOZA et al) 15 April 1986, see entire document.	1-20, 73-75, 78-91, 94-98
A	US 5,197,094 (TILLERY et al) 23 March 1993, see entire document.	1-98
A, P	US 5,593,349 (MIGUEL et al) 14 January 1997, see entire document.	1-98

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"T"	later documents published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
*'A' document defining the general state of the art which is not considered to be of particular relevance		
*'E' earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
*'L' document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
*'O' document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
*'P' document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
29 MAY 1997	11 JUL 1997

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer GEORGE MANUEL 
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